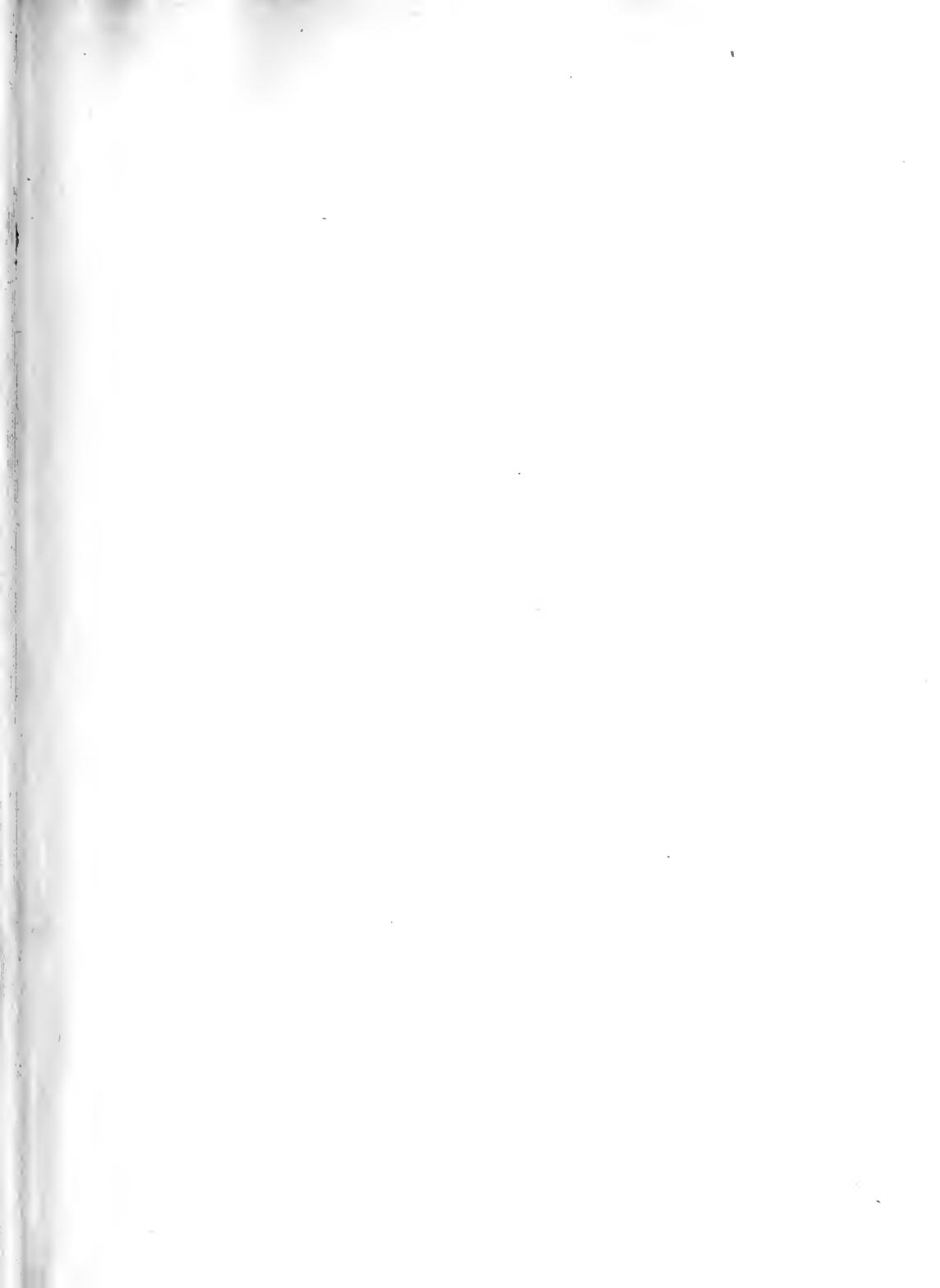
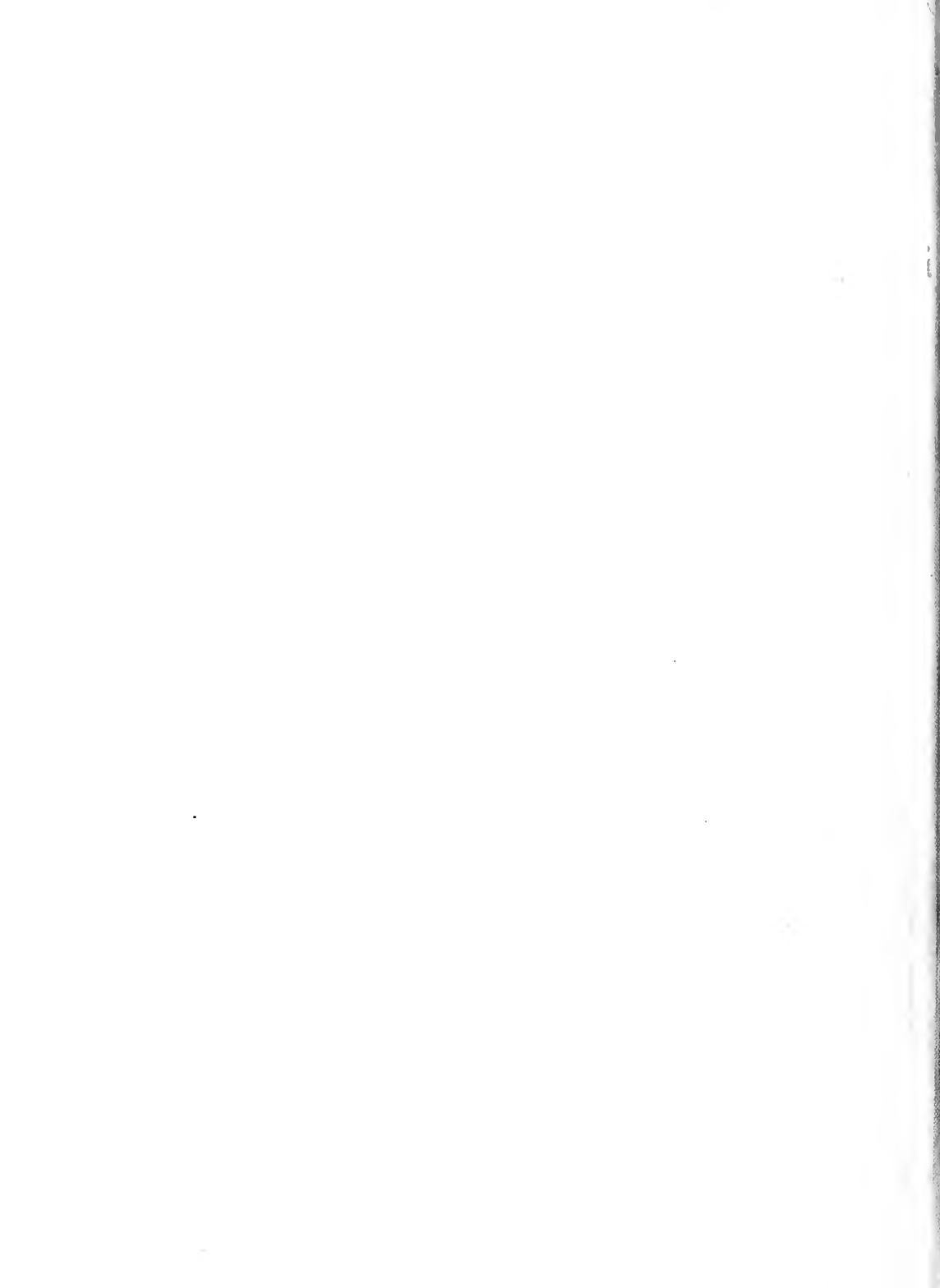


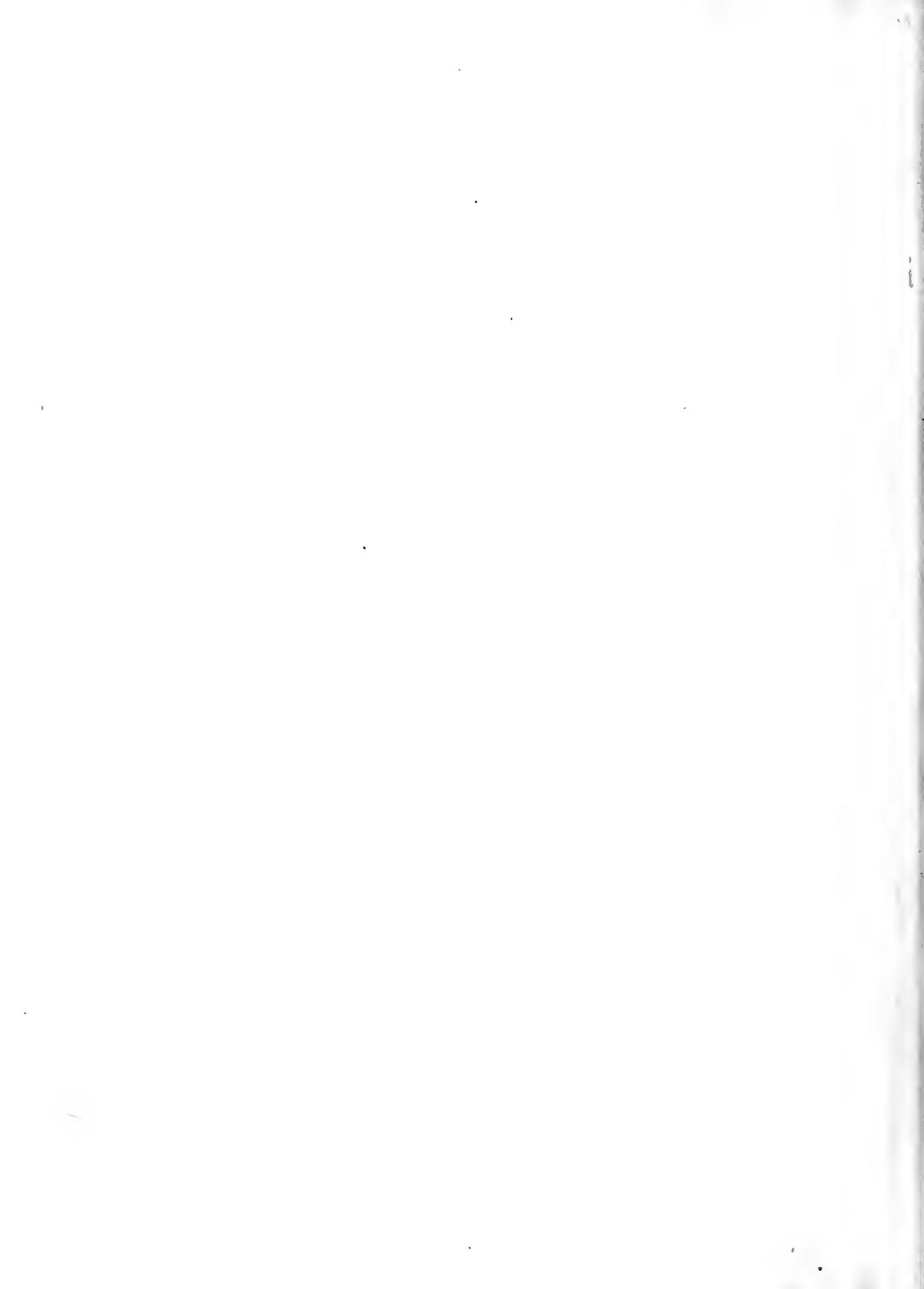
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Pulp and Paper Magazine

OF CANADA

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EDITORIAL

A TOAST FOR THE NEW YEAR.

It may be a bit unusual to propose a toast in print, but we take this occasion to ask our readers to rise and drink (what it is depends on where you are) "to the health of Safety First, may his tribe increase and greatly succeed."

The Safety First family is rapidly becoming one of the "first families" in the country. Considerable growth occurred during 1918 and much progress has been made in making the pulp and paper mills of Canada healthier, safer and pleasanter places to work in. The mills of Ontario are especially to be commended for the organized effort that has been made to remove hazards and educate workmen to avoid those that cannot be eliminated. Records of the year show conclusively that the careful, thoughtful workman is the best safeguard.

The number of accidents, several of them fatal, in the pulp and paper industry is unfortunately and unnecessarily large. There should be a concerted, organized effort throughout the Dominion to make 1919 a red-letter year in the annals of Safety First. We are firmly convinced that every serious accident can be eliminated, and most cases of illness. This can not be accomplished without education and inspiration. A clean slate for the new year is not too much to aim for.

A unique example of what can be achieved by concentrated effort is the result obtained in St. Louis during the week of the National Safety Council convention last September. The week prior to the Convention saw 10 deaths from accidents. This was a normal week, for there were 510 such deaths during the year 1917. The week following that of the Convention, during which everyone helped to prevent accidents, there was only one accidental death in St. Louis—that of a drunken driver, who rolled off the seat of his motor truck to the pavement and was killed by the fall. Concentrated effort can produce marvellous results. What has been done in the City of St. Louis can be done in the pulp and paper mills of Canada.

Ontario mills are well organized for Safety Work. The Safety Association comprising those mills should be extended to cover the Dominion. There should be a Safety Section of the Canadian Pulp and Paper Association, and every mill should be a member of the National Safety Council. The Pulp and Paper Section of this council already includes a number of

Canadian mills. They should all be in it. If you do not know about it, ask us or write to the secretary of the Section, Mr. A. P. Costigane, who is also secretary of the Ontario Pulp & Paper Makers' Safety Association, Toronto.

Remember the toast, and make (good) this resolution for the New Year, "I will not take risks. I will be careful of myself and my fellow workman. I will try to make the mill I work in a safer place."

WHAT ARE WE GOING TO DO ABOUT IT?

The year 1919 will see the great war brought definitely to a close by the conclusion of peace. What the terms will be cannot be stated with accuracy, but the intentions of the Allied Nations are well known on most of the important points. The one determination that seems most prominent in the speeches of national leaders is that there be an honest, just, and lasting settlement of the present difficulty, and provision for the settlement of future difficulties in a manner that will make impossible a recurrence of a world crisis such as the one from which we are just beginning to recover.

Is the end of the great war and the permanent defeat of militarism to be but the beginning of an even more bitter internal strife? If it is, then the sacrifice of the last four years will have been largely in vain. Strife is a sure sign of tyranny. Either the tyrant is fighting to extend his power or the victims are revolting against it. There is but one cure for such a condition, and that is mutual understanding, confidence and co-operation. The Allied armies represent the democratic world in arms, fighting the autocratic, organized, military tyrant. Because they are free men and inspired with the principles of independence and uprightness, the German ideal of domination by force has been overthrown. If the world is coming to a period where differences or rather mal-adjustments among the citizens of a country are an incentive to strife, then the most important lesson of the war has been missed — we shall not have learned that war does not pay. War of any kind or magnitude is first, last and all the time a purely destructive agent. Life is not a destructive but a constructive process, and any agent that does not lend itself to the true purpose of life has no place in it.

The necessity of overcoming enormous difficulties has welded our army into a magnificent force. The

need of supplying them with food and munitions has welded our people into a nation with a single purpose. That purpose has been accomplished and all but consummated. Hummishness is defeated. We still face the problem of our own future. What are we going to do about it?

Canada is blessed as few countries are with raw materials and natural resources. Their proper development will bring sufficient wealth for individual comfort for every Canadian. This cannot be accomplished without the earnest effort and honest co-operation of every one in the Dominion. It will only be accomplished by each one contributing his share, be it brawn or brains, and the more intelligent the brawn the easier will be the task. Wealth must be produced or it is not to be had. A certain amount can be stolen, but if production ceases and goods are destroyed, then the wealth so acquired becomes of no value. Only wealth is appreciated that is honestly earned, for which value is given. "An honest day's work" is no vain nor idle expression. It means that value has been given and wealth earned in proportion. If the remuneration is not in proportion to the value given in labor (of whatever kind), then an adjustment is called for, but not a war.

The experience of Russia is showing the fallacy of stopping the production of wealth. There we see a nation that has quit work. There has been a general walk-out, and somebody has plugged the whistle. In many cases this did not seem sufficient, so the former employer has been shot and the factory burned, and now there is no place to work, no work to do, and no one who knows how to find work and organize it. It doesn't pay to throw the captain and mate overboard unless someone can navigate the ship. We must all keep sailing along in orderly fashion or the world will starve to death in mid-ocean of life, much as Russia has prospects of doing.

Surely with the assurance dawning of peace among nations, we are not going to be such fools as cut one another's throats at home!

A CODE OF HONORABLE NAMES.

My name for every true man in the Dominion of Canada will be the honorable name of "Canadian."

My reference to all "new Canadians" born in other lands shall never be dishonored by slurs, nicknames or hyphens.

My purpose shall be to discourage in the native born the love for titles, to help every immigrant to forget the hyphen and be proud of the name Canadian and to stamp out the use of such nicknames as words of derision of the foreign-born.

We pledge our service never to use, and to discourage everywhere, the use of such words as Dago, Dutchy, Froggy, Ginny, Greaser, Heiny, Horwat, Hunky, Kike, Miek, Paddy, Sheeny, Spaghetti, Wop,

as applied to any foreign-born resident of the Dominion of Canada.

These paragraphs are adapted from a bulletin sent out by the Americanization Division of the Bureau of Education, Washington. Many of our troubles can be traced to our persistent, though often unconscious effort to alienate the alien. It is hard to conceive of a more effective inducement for a foreigner to keep to himself than the discourteous attitude many of us hold toward him and his language and customs. Most of our foreign population, certainly the best of them, have come to Canada to make a home. It is our privilege and duty to our country to do all we can to help them become Canadians, and to establish Canadian homes. Let us treat them as potential fellow citizens, and take pains and pride in perfecting their citizenship.

WANT ANY HELP?

Mr. H. C. Hudson, Inspector of Labor Agencies for Ontario, writes from Toronto to the Pulp & Paper Magazine as follows:

"If any of the various firms which are interested in your publication care to communicate direct with this office, we will be glad to take up with them any special phase of their employment problems. With the extension of the employment bureau system and the altered labor conditions since the signing of the armistice, it should be possible to bring every manufacturing plant up to strength as far as its supply both of skilled and unskilled labor is concerned."

NOW IS THE TIME TO GET A CHEMIST.

Now is the time for pulp and paper mills to get busy on organizing a research department, or at least a chemical laboratory for routine analysis and plant control. There are a number of chemists who have been doing fine work on military problems, looking for openings in commercial life. The pulp and paper industry is an attractive field for a man with aspirations and ambition. The present is a grand opportunity to get some able men. The editor is in touch with a few chemists and engineers who have had experience in the industry, and would be glad to pass their names on to mills who are alive to the need of technical assistance in solving the problems that lie along the road to successful operation under conditions that will soon surround the industry.

In announcing the purchase of the Odell mill by the Brompton Pulp & Paper Co., a Canadian daily used the headline, "Brompton Buys Big U. S. Properly." If any one were to buy out Uncle Sam, we could leave it to Brompton to do it "properly."

The city of Shanghai is contemplating the installation of a sewerage system. Don't get too previous there, Shanghai!

The Manufacture of Groundwood Pulp

By G. W. DICKSON, Hawkesbury, Ont., Riordon Pulp and Paper Co.

Historical.

The history of the groundwood process is not a very long one, as counted in years. It does not date back earlier than the middle of the nineteenth century. Keller and Voelter exhibited wood grinders in London and Paris in 1867. At this time groundwood was being made by some mills in Germany. On our own continent, the Pagenstecher brothers were probably the pioneers. They imported two grinders in 1866 and built a mill at Curtisville, Mass., in 1867. Commencing with half a ton per day their product was tried out in the Smith Paper Co.'s mill, and proved its worth, as the Smith Co. at once contracted for their entire output. The Pagenstechers controlled the Voelter patents until they expired in 1884. Poplar was the favorite wood for this process—the advantages of spruce not being realised until years later. The first pulp grinder in Canada is said to have been installed by Alex. Buntin at Valleyfield.

An early type of grinder, the predecessor of the now familiar 3-pocket machine had the stone mounted on a vertical shaft. Eight pockets surrounded the stone, and the wood was impressed on it by means of a gear, driven by the stone shaft, somewhat similar to the manner in which the jaws of a chuck close in upon a piece of work to be turned on a lathe. When the grindstone became dull the machine was shut down and "sharpening" was accomplished by bush-hammering the entire face of the stone. From these modest beginnings the industry has grown in about 50 years, in Canada alone to 39 mills, whose combined annual production is 900,000 tons.

In making groundwood, water is essential either as a vehicle or a cooling agent. The pulp consequently contains varying amounts of moisture. When speaking of a "ton of pulp," the commercial or air-dry state is generally understood, that is 10 per cent of the ton is water.

Description of Apparatus and Process.

GRINDERS.—The commonest type is the 3-pocket grinder, built to grind 2 ft. or 3 ft. wood. It consists (Fig. 1) of a grindstone (1), mounted on a shaft (2), and gripped by two steel flanges (3). The flanges are made in pairs and are screwed on to the shaft by right and left hand threads, so that rotation in the proper direction tightens their grip upon the stone. The stone should be bush-hammered to an accurate fit to the flanges, and cardboard gasket used between them. After mounting on the shaft, the stone should be turned up true before being placed in the grinder. This saves the grinder from excessive racking due to starting up with an unbalanced load. A turning machine of this nature is easily made. All that is required is a rigid frame of timbers or old "I" beams, two bearings, a slide rest for the dressing tool, a pulley to slip on the end of the stone shaft and power to turn it. The dressing tool is similar to the emery wheel dresser, or the ordinary sharpening burr may be used. Burrs that are not in good condition for sharpening are frequently used for turning. If a surface similar to the face of a bush hammer is worked up on the curved surface of a steel cylinder we have the essentials of the sharpening burr. The surface may be fluted, spiral or dia-

mond pointed, they all have a similar action in removing the stone surface. The grinder side-frames or casings (4) are bolted to the bridge-trees (5) and the latter carry heavy studs (6) which support the pockets (7). The nuts on the studs allow for advancing the pocket as the stone wears down. The edges of the pocket directly over the stone face are toothed to retain the wood and at the same time allow the pulp and water to pass on down into the pit. Mounted on the pocket is the hydraulic cylinder (8) which transmits pressure to the wood through a piston rod (9) and a flat pressure foot (10). Wood is charged through a door at one end of the pocket. Each cylinder carries a reversing valve for operating the piston up (for refilling the pocket) and down (forcing the wood against the stone for grinding). The hydraulic pressure in the cylinder is generally carried at 60 to 80 lbs. per sq. in. Since the surface of the wood in contact with the stone is continually changing, the unit pressure of the wood on the stone also varies. The hydraulic piping from pump to grinder cylinder cannot be entirely carried out in rigid piping, since the cylinder must be adjusted to the wear of the stone, and is also subjected to severe vibration. From a point close beside the grinder, to the valve, the piping is replaced by short lengths of flexible hose, to each cylinder. For the same reason hose is also used for the discharge or return water. Reducing valves are sometimes used to decrease the pressure after sharpening the stone. This prevents an excess of coarse stock from a sharp stone at the cost of reduced production for the interval, until the stone regains its normal cutting face.

Stones vary considerably in hardness, consequently some require sharpening every three or four hours, others will run 10 hours or more without sharpening. Raising the pressure in the cylinder (which will also increase the production) will naturally dull the stone more quickly. The sharpening burr should be mounted with a mechanical feed, either screw or hydraulic.

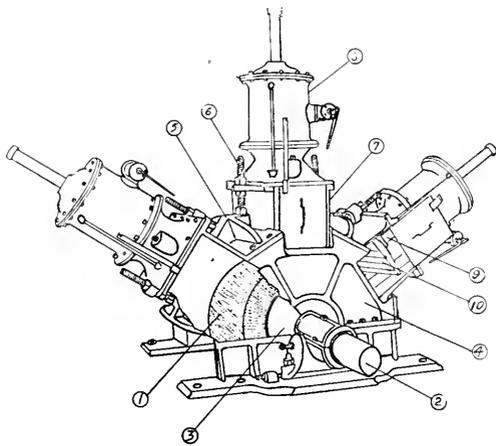


FIG. 1.
THREE POCKET GRINDER

The advantage of this is that the stone is kept true as well as sharp. A "hand sharpening" tool will naturally cut more deeply into soft spots in the stone, and if the stone is out of true uniform pulp is not obtained.

No universal rule can be laid down for the most suitable type of burr to use. The stone, the wood and the quality of pulp required are all factors concerned in the selection of the most suitable burr. All types serve the one end, however—to expose the grit of the stone and carry off the ground fibres to the pit. If the fibres are not properly carried away and washed off the stone as soon as ground, they are repeatedly exposed to grinding action and consequently weakened. As the grinding action generates heat it is necessary to introduce cooling water in the pit and between the pockets. Re-water is best suited to this; since its temperature is higher than fresh water, it does not injure the hot surface of the stone to so great an extent.

Three pocket grinders have some disadvantages, such as causing variations in power consumption as one or more pockets run empty. To overcome this they have been built with four and five pockets. This generally gives a more uniform wear and longer life to the grindstone. Hand-feeding of the wood has also been found unsatisfactory, and to overcome this and also to increase the production of the grinder the Magazine Grinder has been brought out. The advantages of this type are:—

1.—Increased capacity, 20 to 24 tons per day, against 6 to 8 tons of the ordinary type.

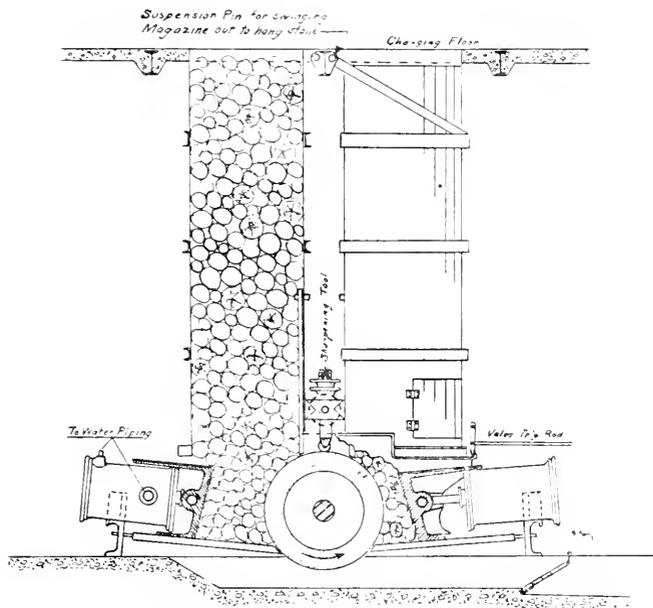
2.—Wood fed by gravity—not open to the irregularities of manual feeding.

3.—Constant load on motor or turbine,—the pressure being automatically increased on the remaining pockets while one is re-charging.

4. Decreased cost of attendance.

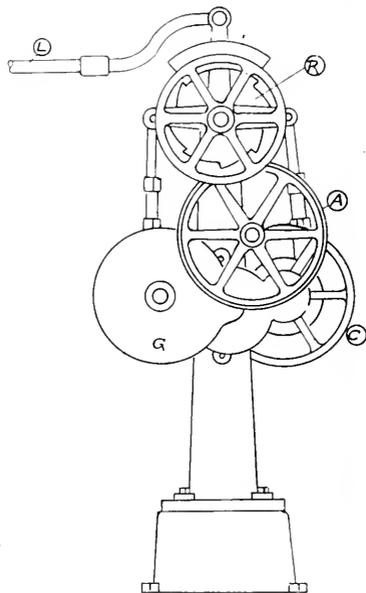
Fig. 2 shows a Voith Magazine Grinder in part sectional elevation and Fig. on page 6, a general view of the same make of grinder. Wood, in 1 ft. lengths, is fed into the top of the magazine on the charging floor. When the pressure foot is drawn back, the space in front of the stone is re-filled with wood by gravity. The pressure of the wood above, and the foot advancing horizontally, hold the blocks in place as they are ground. The sharpening tool between the magazines is operated by a hydraulic cylinder, mounted between the grinders, when the latter are operated in pairs. When a new stone is to be hung the magazines are swung clear by lifting them from the charging floor, or drawing the base of the magazine outward while its weight is suspended from a pin secured to a floor beam, as shown. Fig. 2 does not show any details; the valves and governor arrangements will be seen in Figs. 3, 4, and 5.

The distinctive feature of the magazine grinder is the automatic charging of the pockets. This is brought out in Fig. 2. A diagram of the valve arrangements is shown in Fig. 4. "G" represents the governor, "A" is operating device, timing the tripping of all 4 pockets, A, B, C, and D. The remaining devices, B, C, and D operate the valves at proper intervals, controlled by "A." Fig. 3 gives a better idea of the construction of these operating devices. Each valve operating device is driven by a 2 in. belt from the main shaft to the pulley "A," Fig. 3. A reduction gear "C" carrying a crank imparts a rocking motion to a dog above the ratchet wheel "R," which may be made to engage the ratchet at the proper time. An extension of this ratchet wheel shaft forms the valve stem. The valve is of the taper plug type, and operates the hydraulic cylinder in the same way that the manually operated valve does on the 3-pocket grind-



VOITH MAGAZINE GRINDER

FIG. 2



VALVE OPERATING DEVICE

FIG. 3.

er. Thus, the dog turns the ratchet the space of the first tooth—pressure is turned off and low pressure water is admitted to push back the piston. Second tooth moves over a blank space in the valve, giving an interval for the new blocks to fall in front of the pressure foot. Third tooth opens valve port to low pressure forward, and the blocks are forced up against the stone. The fourth tooth, and final one for a cycle, admits high pressure to the cylinder for grinding. In this way, the volume of high pressure water used is small compared with that of the low pressure water. The valve now remains in this position until the pressure foot has advanced to a determined point. By referring to Fig. 2, it will be seen that there is a hook on the rear side of the right hand pressure foot. These hooks on each pressure foot draw the valve trip rod towards the stone and set the lower dog against the ratchet wheel "R." Fig. 3, in a position to repeat the cycle of operations already described. So far all the pockets might trip at once, and thus seriously disturb the load on the motor or turbine driving the grinders. This is prevented by a timing device, which gives each pocket an opportunity to trip in turn, but does not actually trip them unless the pressure foot on any particular pocket has advanced sufficiently for its valve trip rod to set its dog against the ratchet wheel. This timing is carried out by a second reduction gear "G," Fig. 3, on device "A," which revolves very slowly. A small shaft "K," Fig. 4 connects devices "A" and "C," and the slow rocking motion is imparted to "B" and "D" through the adjustable pipes "I.I." Consider "A" as set 90 degrees ahead of "C," and "A" are necessarily 180 degrees ahead of "B" and "D." This gives the pockets an opportunity to trip in the sequence A-C-B-D, with equal time intervals between. If a pocket is ready to re-charge the lower dog is brought up against the ratchet wheel and the arm "L" advances it so that it turns the ratchet wheel sufficiently to engage the upper dog and thus start the valve in its cycle of operations. If the pocket is not ready for re-charging, the lower dog swings back and forth idle.

As already stated, the Voith grinder maintains a constant load rather than a constant pressure. This is accomplished by a governor, and is shown in Fig. 5, arranged for motor drive. It consists of a regulator, in reality a small induction motor, connected to the main motor leads through transformers as shown. When the main motor load decreases, the regulator reacts through a small arc and further opens the hydraulic valve, admitting more high pressure water to the cylinders, consequently increasing the load. Similarly, as the motor load increases the quantity of high pressure water is decreased. A dash-pot prevents too sudden changes of pressure, and the load to be carried is determined by the variable weights suspended as shown. An ammeter mounted on the governor so that the load being carried may at all times be seen and adjustments made.

When a pocket is re-charging, it will be seen that the governor immediately places an equal load on the remaining pockets as was previously being carried by all of them. If there is only one grinder being driven from a motor, then one pocket carries all the load, while the other is re-charging, or the load on it is doubled. Now

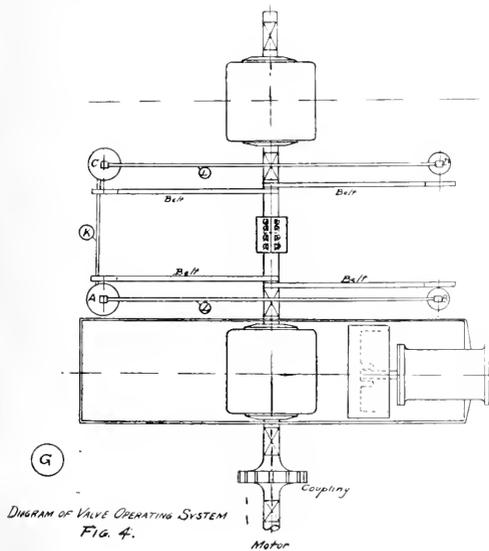
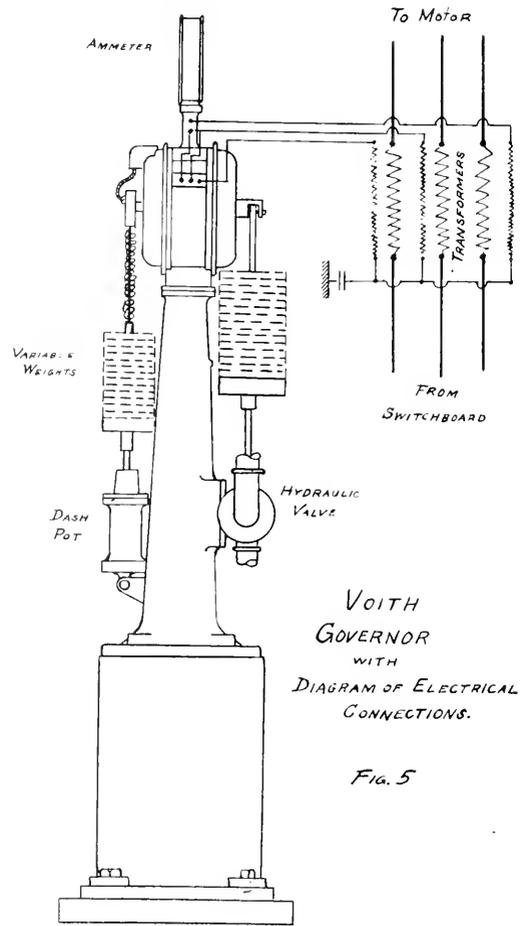
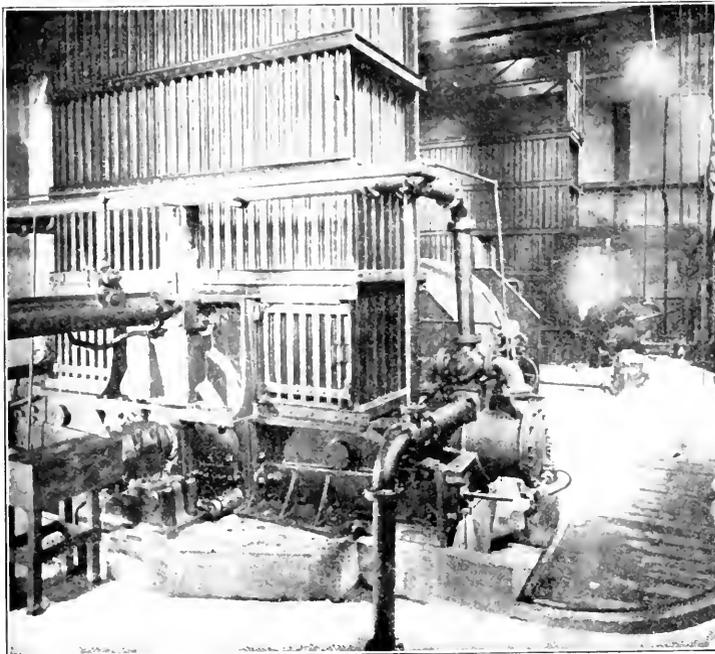


DIAGRAM OF VALVE OPERATING SYSTEM
FIG. 4.



VOITH GOVERNOR
WITH
DIAGRAM OF ELECTRICAL CONNECTIONS.

FIG. 5



if two grinders are driven from the same motor re-charging a pocket will only increase the load on the others by one-fourth, and the governor has only to take care of a variation of a quarter of the load, whereas in the former case it had to take care of a variation of half the load. This shows that it is advisable to have several grinders driven by the one motor, since in this way the load variations are not so large and the pressure variations on the cylinders will not be so excessive.

This illustration gives a general view of a Voith Magazine grinder as installed.

(To be Continued.)

Editor's Note: This is the first of a series of articles on the manufacture of pulp and paper, which have been prepared specially for the Pulp and Paper Magazine. The articles on Soda Pulp and Sulphite Pulp are complete, and several others are in course of preparation. Each phase is treated by an expert.

LONGEVITY OF TOP DRYER FELTS.

In almost every case a top dryer felt will run longer than the bottom dryer felt. This is explained in several ways. The heat from the bottom dryers rises and tends to keep the top felt in a dryer condition than the bottom one. This, of course, keeps the top felt from rotting as soon as the bottom one. Another thing that the life of the dryer felt depends upon is the machine tender, and also on the speed of the machine. When a dryer felt is put on the machine it is very important that the seam be the very best that is possible. Use a good four-ply thread, and have it waxed well with bees-wax, and make your stitches about three-quarters of an inch apart. It is just as well not to have the thread over four feet long.

When using a long thread the constant friction of pulling the thread through the felt will cause the thread to become weakened. By using a short thread the strength of the sewing thread is preserved, and at the same time insured against the seam breaking out every two or three weeks. Do not run the dryer felt any tighter than is necessary. The slacker the dryer felt is run the longer it will last. The most important reason why a dryer felt gives out or rots out is because of the moisture that comes from the paper, so it is advisable to dry your felts at every opportunity. When washing up always let the dryers run. If they are shut down the only part of the felt that would dry would be that which touches the dryer, and the other sections would be damp.

INTERESTING STATISTICS OF U. S. PAPER INDUSTRY.

Some interesting figures have been compiled by the pulp and paper section of the War Industries Board under the supervision of S. L. Willson, chief of the manufacturing section.

There are 821 pulp and paper mills in the United States producing annually about 5,658,000 tons of paper and boards. Classified according to general grades, these are divided as follows:

	Tons Yearly	Production Daily	Approximate Value
Newsprint	1,360,000	4,200	\$136,000,000
Book	780,000	2,600	125,000,000
Boards	1,950,000	6,500	156,000,000
Wrappings	705,000	2,350	89,000,000
Fine Writings	405,000	1,350	142,000,000
Tissue	132,000	440	27,000,000
Building and Felts	249,000	830	50,000,000
Miscellaneous	177,000	590	55,000,000
	5,658,000	18,860	\$780,000,000
Imported from Canada (newsprint)	560,000	1,840	
	6,218,000	20,700	
Exported yearly: (6 months actual)	147,875		
(6 months esti'd)	147,875		
Total domestic consumption	5,922,250		

Brief on Behalf of Manufacturers Before the Paper Control Tribunal

The following extracts from the Brief submitted last week to the Paper Control Tribunal by the counsel for the paper manufacturers, J. H. Montgomery, K.C., V. E. Mitchell, K.C.; G. W. MacDougall, K.C.; J. F. Orde, K.C., and G. F. Henderson, K.C., will be of interest to those who have followed the case:—

The Interim Order, from which both parties appeal, fixed the maximum price to be charged for newsprint paper for the months of October and November, 1918, with the proviso that it should be retroactive to the 1st July, 1918, and with a further proviso that in the event of its subsequently being ascertained that the price was either too high or too low, an adjustment could be made.

The Manufacturers appeal from this Order contending that the price fixed was not sufficiently high; also that it should have been made retroactive to an earlier date.

The Publishers have also appealed contending that the price is too high and that the price should not have been made retroactive.

Both appeals will be treated together in the present Brief.

After reviewing concisely the history of the case, with a passing notice of the investigation in the United States, the Brief gives an account of the hearing before the Controller on September 23, 24 and 25. The argument against admission of further evidence and for an increase by the Tribunal of the award of the Paper Controller is substantially as follows:—

Meetings of September 23rd, 24th, 25th, 1918. —

When the Commission reconvened in September 23rd, no appearance was registered on behalf of the Publishers. Additional evidence was taken on the 23rd and 24th, both Mr. McNicoll and Mr. Clarkson being examined as to the thoroughness of their investigation and as to the question of investment and return.

The session of the 25th September was taken up with the arguments and after a short adjournment, the Commissioner announced his decision fixing an interim price for the months of October and November, the price being made retroactive until 1st July, 1918.

Roll news in earload lots \$3.45 per cwt, \$69 per ton.

Roll news in less than earload lots \$3.52½ per cwt.

Sheet news in earload lots \$3.80 per cwt.

Sheet news in less than earload lots \$3.92½ per cwt.

These prices were very much less than these for which the manufacturers had been contending and it was pointed out to the Commissioner that they would not carry into effect the principle which had been conceded by everyone, including Counsel for the Publishers, viz., that a price should be fixed which would give a reasonable profit to the higher cost of mills efficiently conducted.

In the case of the Booth mill the average cost for the six months covered by Mr. Clarkson's latest report was \$55.70 running as high as \$61.99 for the month of January. If to these costs were added the fixed increase of \$10.07 in the case of Mr. Booth due to wood, labour and freight, the average cost would be brought to \$65.77 giving a profit of \$3.23 per ton

only as against the profit of \$19.75 per ton fixed by the U.S. Circuit Judges, or \$17.50 per ton, the figure which apparently forms the basis of Mr. Pringle's calculations. (Other mills were quite as unfortunate.)

Under these circumstances counsel for the manufacturers announced that they would feel obliged to advise their clients to exercise their right of appeal to this Tribunal and at a later date notices of appeal were given, these being followed by similar notices on behalf of the publishers.

Should New Evidence be Admitted?—Were it not for the application made by counsel for the Publishers for a re-opening of the case and a re-trial, counsel for the manufacturers would feel it a duty to apologize for the lengthy review of the proceedings which has been given. In fact this would have been entirely unnecessary, not to say unjustifiable. In view, however, of this application it is felt that the situation could not be properly appreciated without giving full consideration to the course of these proceedings since the opening of the investigation in May, 1917. The Court has already expressed itself in the sense that on an ordinary appeal such an application would not be entertained for a moment. It only remains, therefore, to consider whether there are such special circumstances in the present case as would warrant an exception being made and permission being given for a re-trial of this case before an appellate tribunal.

The manufacturers respectfully contend that there is no occasion for the adoption of a course so unusual.

1. The prices fixed are only interim prices subject to readjustment.

The remarks of the Commissioner (September 25th, p.323) make it abundantly clear that the door is still open to the Publishers to make whatever evidence they wish before him, when full effect can be given to any such evidence.

2. The Publishers have already been given the fullest opportunity to make their case.

The issue in regard to the Canadian Export Paper Company was at the most only a collateral one and could equally well have been dealt with by independent proceedings as was in fact done in the United States where prosecutions were instituted under the Sherman Act.

3. The publishers have had before them Mr. Clarkson's statements ever since September, 1917.

This will appear by reference to the record; the Publishers have in fact put forward a statement of their criticisms (Bulletin 426). They have also been repeatedly invited to put forward any other criticisms which they might wish to make. It is rather late in the day for them to come forward when the case is before an Appellate Tribunal with a demand for a further investigation which could equally well have been made over a year ago. The Publishers were fully aware of Mr. McNicoll's appointment as expert and of the fact that he was engaged throughout the summer with Mr. Clarkson in making a round of the mills and a verification of such matters as they asserted should be looked into by an expert, and then would

have been the time for them to put forward their demand and not after the investigation was completed.

4. The American evidence having been introduced into the record, the Demands of the Publishers have been fully satisfied.

At the meeting before the Cabinet this was all that Mr. Tilley asked for.

5. It has not been shown that any of the information asked for is either relevant or important enough to affect the result.

It is to be borne in mind that the interim price which has been fixed had not been made to correspond with mathematical precision with any one mill or group of mills. All that has been done is to take a more or less general average, and even then the prices fixed are far from being the maximum which the evidence justified (Commissioner, September 25th, p. 323):

"I have not fixed the maximum price that I could have fixed upon the evidence that has come before me and upon the evidence that was given before the Federal Trade Commission. I have done that advisedly, etc."

It is hardly to be presumed that in an investigation lasting as that of the Federal Trade Commission did from January to June and covering over 5,000 pages of evidence, anything of any importance could have been overlooked. The American Newspaper Publishers' Association were represented before the Commission by no less than five distinguished counsels. The Association numbers among its members the more important Canadian publishers as well as American.

Mr. McIntyre, the special representative of the Paper Committee of the American Newspaper Publishers' Association, was present throughout all the hearings and Mr. Imrie a portion of them, but what is more important, the Federal Trade Commission had with it through its entire investigation the services of the very expert, Mr. McDiarmid whom the publishers desired to have appointed by Commissioner Pringle. Finally, the publishers had no reason to complain of an unsympathetic tribunal. The costs were independently investigated by two of the best known firms of accountants in the world, Messrs. Price, Waterhouse & Company and Perley, Morse & Company in conference with Dr. Merchant, Chief Accountant of the Federal Trade Commission. Under these circumstances the manufacturers again urge that it would be an unwarranted hardship to compel them to go over the investigation again. There is not another industry either in this country or in any other that has been subjected to the degree of investigation that the Canadian paper manufacturers of this country have had to undergo during the past two years. Like every other manufacturer they are at present faced with many new problems consequent upon the cessation of hostilities and the re-adjustment of the world's trade and in a country like ours where newsprint paper constitutes one of our largest export productions, it is respectfully submitted that every reason of public policy stands out strongly against any further persecution.

Manufacturing Costs.—With the exception of such items as represent more or less arbitrary allowances based upon general experience, the manufacturers do not propose to enter upon a discussion of the details of their respective manufacturing costs unless called upon to do so. These costs have been gone over again and again by independent accountants and the results

tally so closely that the Manufacturers do not feel warranted in discussing the various details which could hardly affect the result very materially.

In saying this, however, the Manufacturers feel that they should register a strong protest against the method of averaging, which has been adopted by Mr. Commissioner Pringle and apparently by the Federal Trade Commission as well. In point of fact, the "cost" reported by the Commissioner is not "actual cost" but "average cost," and the result is, as will be later pointed out, that some of the higher cost mills are obliged to sell their product at a figure which is commercially impracticable, since it would not enable them to stay in business were they not engaged in the manufacture of other products besides newsprint. One would almost think that this proposition is so elementary as to prove itself by its mere statement, but the fact remains that the process of averaging has prevailed.

There is one remark which the Manufacturers desire to make which bears upon all these costs and is touched upon on pp. 64 and 65 of the Brief filed on behalf of the Manufacturers in the United States. The various sets of accountants who have gone over these costs have proceeded upon the assumption that the earlier and less expensive materials would be used first. The illustration given in the American Manufacturers' Brief applies with equal force to Mr. Clarkson's statements. If a manufacturer was shown to have any wood, one-half of which came from the 1915-16 cut and the other half from the 1916-17 cut, for the purposes of accounting only the cost of the earlier wood was used, although in fact the manufacturer would in all probability be using wood from both cuts.

Apart from this general criticism which would considerably more than offset any criticism of details which the publishers could urge, the only items which it is proposed to discuss are Stumpage, Depreciation, Sinkage and Machine losses.

Stumpage.—It is of the utmost importance not only from the point of view of the manufacturers, but from a Canadian view point, that if any misunderstanding has occurred in reference to this item it should be cleared up. The value given to stumpage in the United States is summarised on p. 71 of the American Manufacturers' Brief. The accountants there in submitting their costs included an item of \$2 for stumpage except in the case of the International Company where \$2.40 was allowed, incidentally mentioning that the \$2 allowance was very much less than the value testified to. The Federal Trade Commission in its judgment gave no details as to how their figure was reached, so that their views are unknown. The Circuit Court, however, has fallen into an error, the result of which would be most serious to the paper industry of Canada since it would mean, if persisted in, that over 1,000,000 cords of our pulp wood would be going to the United States annually in the form of paper, for which the people of Canada would be receiving no value whatsoever above the bare Government dues imposed upon the respective limit holders. The judges of the Circuit Court say in their judgment:

"In ascertaining manufacturing cost no allowance for stumpage in respect to wood obtained from leased Canadian Crown Lands is made, such stumpage not representing any actual disbursement nor the partial exhaustion of property for which payment (on a stumpage basis) was ever made. In respect, however, of wood cut in owned land such stumpage charge is

proper and \$2 per cord is less than the market rate." As a very considerable proportion of the wood which goes into paper manufactured in Canada is cut from leased Canadian Crown Lands the accuracy of this statement cannot be left unchallenged. . . . These limits are dealt with in exactly the same way as lands held in fee, so that it is incorrect to say that stumpage upon them does not represent any actual disbursement. The license holder pays a fixed annual fee per square mile in addition to the original purchase price and also stumpage dues at the rate of so much per thousand feet. The stumpage dues in the Province of Quebec were formerly \$1.05 per thousand feet, but have now been raised to \$1.60, six hundred feet board measure being taken in Quebec to represent a cord.

In the Province of Ontario the regulations are somewhat different. In the case of the Abitibi Company and the Spanish River Company grants were made to their predecessors under which they were required to expend large sums of money within a specified time as a condition of the grant. . . . The evidence as to the value of stumpage given in the Canadian investigation shows that it runs from \$2 upwards according to location.

Depreciation. — In Mr. Clarkson's statements no allowance is made for this other than what happened to be shown in the Companies' books. In many cases no allowance whatsoever was made and in very few cases was any sufficient allowance attempted. The reason for this is not hard to find and serves to explain not only the absence of allowances for depreciation but also the absence of many other charges for which allowance should have been made. The history of the paper making industry in Canada has been an unfortunate one. In its earlier stage the Canadian manufacturers were faced with the American duty which they were compelled to absorb in their price to meet the competition of the American manufacturers and this in addition to the Canadian duty imposed upon all of the machinery which went into their plants and upon many of their materials. At a later stage in 1911 the American duty was removed upon all paper valued at less than \$2.50 per cwt. with the result that a number of new plants were started and a period of over-production followed and correspondingly low prices. As a consequence the newsprint end of the several manufactories has always been an unprofitable one and companies engaged in the manufacture of newsprint only, were not only unable to pay any dividends but were obliged in many cases to defer the interest upon their bonds and in some cases to go into liquidation. With this state of affairs existing it is not difficult to understand why it was that very few of them found it possible to make adequate appropriations for depreciation.

After full consideration of the subject, and the evidence which had been adduced on both sides, the accountants in the United States included an allowance of \$3.20 per ton of newsprint paper as a proper charge for depreciation and this allowance has not been disturbed. Canadian manufacturers have accepted the verdict and under the standard form of accounting required by the Federal Trade Commission a similar allowance is now being charged by most of the manufacturers here. The results are not shown in Mr. Clarkson's statements except in the case of the last statement of the Laurentide Company exhibited before this Tribunal. The allowance is made on the basis

of: Groundwood, \$1.00 per ton; sulphite, \$2.00 per ton; news, \$2.00 per ton.

On the basis of 80 per cent groundwood and 20 per cent sulphite, the allowance works out as follows: Groundwood, 80c per ton; sulphite, 40c per ton; newsprint, \$2.00 per ton; total, \$3.20 per ton.

Sinkage.—This item covers not only the wood which actually sinks in the river during the course of the drive, but represents the loss which occurs from the time that the wood is delivered and measured on the bank of the river to the time when it is received and measured at the mill. It naturally varies very considerably according to the length and nature of the drive. . . . The Laurentide Company have a very complete record covering a period of ten years. Mr. Salbhaton testifies that for a ten year period their average loss was 9.2 per cent. He adds that "for the last few years this 9.2 per cent would be largely increased" and he stated the reason.

NOTE:—This Brief is too important to admit of sufficient abbreviation to bring it within the space at our disposal in this issue. The remainder of the argument will be published next week.—Editor.

PAPER EXPORTS HIGHER.

Exports of Canadian pulp and paper products and unmanufactured pulpwood for the month of October reached a total value of \$7,280,315, as compared with \$6,096,399 in October, 1917, a gain of \$1,183,916, according to a summary made by the Pulp & Paper Association. The notable feature of the month's trade was the sudden and surprising jump in exports of groundwood, which for several months have been falling behind last year's record. In October, exports of groundwood amounted to 325,521 cwt., valued at \$396,189, as against 247,508 cwt., valued at \$383,762 in 1917. In September the exports of groundwood had shown a loss of \$936,905 as compared with the previous September.

The details for October, 1918, follow:

Month of	1917.	1918.
October.		
Paper	\$2,838,237	\$3,317,237
Pulp, chemical	1,962,286	2,914,255
Pulp, mechanical	383,762	396,189
	<hr/>	<hr/>
	5,184,285	6,627,681
Pulpwood	912,114	652,634
	<hr/>	<hr/>
	\$6,096,399	\$7,280,315

Figures for the first seven months of the current fiscal year show a total of \$57,245,135, a gain of \$14,873,782 over the corresponding period in 1917, and of \$28,864,533 over 1916, or more than double. Following are the figures for the seven months' period:

Seven Months.	1916.	1917.	1918.
	\$	\$	\$
Paper	13,272,977	20,912,832	25,538,881
Pulp, chem.	7,264,142	11,455,040	18,817,444
Pulp, mech.	3,219,440	4,524,581	12,908,275
	<hr/>	<hr/>	<hr/>
	23,756,559	36,892,453	47,264,600
Pulpwood	4,624,033	5,478,900	9,980,535
	<hr/>	<hr/>	<hr/>
	28,380,592	42,371,353	57,245,135

Forecast of Big Increase in Paper Mill Activities

By THE BUNTIN-REID CO.

The Government of the United States having issued notices that all regulations affecting the paper industry were cancelled will react to a very large extent on conditions in this country and the making of paper in all its different lines will be resumed at the first possible opportunity. There have been many hardships and handicaps to be fought against during the last four years, but the paper business has maintained its own and kept going without any serious difficulties either for the manufacturer, dealer, or consumer.

We believe the time has now come when it is necessary to prepare for the business that is ahead of us. This belief is based on a careful study of the situation and after investigating from all sources available we still believe that the paper business and those allied with the paper business have a considerable era of prosperity ahead of them. This opinion is given by men who are authorities not only in one line but in many lines of business, and from whatever standpoint the question is viewed all opinions agree on these facts: first, that this country has entered and will pass through a period of reconstruction, and secondly, that active prosperous business will follow this period.

In emphasizing this point we might state that paper itself is necessary in the period of reconstruction and in the business that is to follow. No one needs to be convinced of the necessity of paper in a period of active business, nor to be reminded that paper is necessary in the following period of reconstruction. When other products are changed from war to peace, factories are being re-organized, new forms, new printing, more advertising and more printing is necessary on every hand.

Paper is one of the most essential products in the making of the modern world. It is the vehicle which makes it possible to carry on every business, and unlike many other products, paper does not have to go through the evolution of changing from a war to a peace basis, and paper must render a vitally important service both to a nation at war and to a people at peace, and on that fundamental fact one must base the conviction that paper will be active during this period of reconstruction. The United States Government officially recognized the fact that paper is an essential and a necessary product. Our own Canadian Government also officially recognized the standing of paper by granting priority orders, and while we fully consider that in the future there will be a tendency to reduce prices, it might be advisable for us to refer to the United States Government again on this subject.

A representative of the Government (U. S.) speaking at one of the large American mills a few days ago and speaking in the authority of the United States, said that wages throughout the country would not be reduced until the cost of living was reduced, and that until food prices were lower the present scale of wages would have to be maintained, especially since Canada and the United States must feed the world until well into next year and probably longer, and with this duty before them there is no immediate prospect of the reduction in the cost of food, and consequently there is no immediate prospect of the reduction of wages, which means firm prices generally.

In summing up the situation, therefore, we believe that we are justified in expecting and preparing for a good business during the period of reconstruction that we are just entering, and we believe it will be some time before there will be any material reduction in the cost of paper, especially if price is based on the cost of manufacturing and selling.

Naturally one will hear of offerings here and there by certain manufacturers or dealers who are always liable to go from one extreme to the other, but these offerings will be few and far between. The necessity, therefore, in the times we are entering on is that the trades of all descriptions go on soberly, carrying normal stocks and selling goods with due regard for their cost and for what they can be replaced.

The labor situation at the present time has not had time to improve. There is still a shortage of help in almost every mill. This difficulty will in due course be righted, but until new men can be trained and broken in it will be some time, and the cessation of hostilities assures a normal supply of raw material, and mills will be in a better position to turn out a normal tonnage.—Financial Times.

ERRATA IN WRITING PAPER TRADE CUSTOM NO. 12.

The Pulp and Paper Magazine is asked to print the following corrected list of weights (corrections are shown in brackets). This is not a list of stock carried, but a table of equivalent weights:

Size.	<i>Ledger No. 1 Grade.</i>		
	No. 28.	No. 32.	No. 36
17 x 22	28 lbs.	32 lbs.	36 lbs.
17 x 28	35.5	41 (40.5)	46
18 x 23	31	35.5	40
18 x 46	62	70 (71)	80 (79.5)
19 x 24	34	39	44
20 x 28	42	48	54
21 x 32	50 (50.5)	57 (57.5)	64 (64.5)
22 x 34	56	64	72
24 x 36	65	74	83
24 x 38	68 (68.5)	78	87 (88)
28 x 34	71 (71.5)	82 (81.5)	91 (91.5)

Ledgers, No. 2, 3 and 4 Grades.

Size.	No. 28 Substance only.	
17 x 22	28 lbs.	
16 x 21	25	
17 x 28	35.5	
18 x 23	31	
18 x 46	62	
19 x 24	34	
20 x 28	42	
21 x 32	50 (50.5)	
22 x 34	56	
23 x 36	62	
24 x 36	65	
24 x 38	68 (68.5)	
28 x 34	71 (71.5)	

For the purpose of keeping your records absolutely correct, please insert this page of errata in Trade Customs.

J. D. Fraser, director and secretary-treasurer of the Ottawa Car Works, and secretary-treasurer of the Ottawa Electric Railway for the past 27 years, dropped dead Dec. 20, in the Rideau Club. The Ottawa Car Works has been very successful in the production of special bronze castings for pulp mills.

Three Good Books for Paper Men

The Standard Paper Trade Directory.

There is probably no publication that is so eagerly awaited each year as Lockwood's Directory of the paper and stationery trades. The latest number, which was the 44th annual edition, was distributed a few weeks ago. A year ago the Lockwood Trade Journal Company found it necessary to increase the price of the publication from \$3.00 to \$5.00. In spite of this increase, and although an extra number were printed, every copy was disposed of. During the past year the company has been busy bringing the directory up to date and revising it.

An adequate review of the book would require more space than is available. It is probably sufficient to say that the 1919 edition is even better than any of its predecessors. There is hardly a paper man on the continent who is not acquainted with this publication, and considering the present world conditions and the circumstances affecting the paper trade, we consider ourselves fortunate in being sure of having our copy while the book is still available.

A feature which would be of particular interest to pulp manufacturers as possible outlets for their product and to paper manufacturers as possible rivals for foreign markets is the list of paper and pulp mills in Mexico and South America. We were surprised to find that there are so many.

Canadians connected with the industry and others interested in Canadian pulp and paper trade will find the list of mills in the Dominion of great assistance. If it is desired to know the location of any of these plants we would refer to a map in the Pulp & Paper Magazine for Nov. 7th.

Among the other features of the book are departments giving manufacturers listed according to products both in the United States and Canada, and other dealers as well as manufacturers. There are also lists of bag, box and other paper product manufacturers, dealers in paper stock and mill supplies, general paper dealers and stationers. An interesting department is that giving a list of water marks and brands with the concerns using them.

The Lockwood Trade Journal Company is certainly to be congratulated for the appearance as well as the contents of this book.

Chemical Engineering Catalog.

The editor has never lost his interest in picture-books, but of late years his ideas have changed somewhat. To be interesting now the book must represent service, and in a marked degree this catalog serves its purpose. To quote from the preface:

"The Chemical Engineering Catalog is a book of reference for Chemical Engineers, Buyers and others seeking information on Chemical and Metallurgical Equipment, Machinery, Chemicals and Supplies.

More specifically, it is a collection of condensed catalogs and indexed data relating to the above mentioned subjects, standardized as to page size and typographical arrangement, bound in one volume for convenient and ready reference. It is a Chemical Engineer's shelf-full of miscellaneous catalogs condensed into a single book.

It is indexed and cross-indexed in such a way that one may quickly be directed to any specific information it contains.

It is published annually under the supervision of a Committee appointed by The American Institute of Chemical Engineers, The American Chemical Society and The Society of Chemical Industry.

A copy of the Chemical Engineering Catalog will be loaned, without charge, for a period of one year, to any Chemical Engineer, Chief Chemist, Industrial Plant Superintendent, Works Manager, Buyer, or Head of a Chemical Department in a University or College. On the issuance of a new catalog the old one will be recalled and the new one substituted therefor.

To others than those included in the above classifications, the charge is five dollars for a copy of the volume."

It would be a long list that would include every item represented by this catalog which is of use to the manufacturers of pulp and paper. It would take considerable space even to mention the concerns dealing in such products. We have an idea that the superintendent, manager or purchasing agent of a pulp and paper mill would get considerable education in purchasing possibilities by a careful study of this book. It is nearly twice the size of the issue of 1917, and contains a number of special features, although it is along the same lines as the two previous editions. The catalog is loaned without charge to engineers, buyers, chief chemists, and others in responsible charge in manufacturing establishments. Other persons desiring the book may obtain copies at \$5.00 by addressing the Chemical Catalog Company, Inc., 1 Madison Ave., New York.

The Thirty-Second Annual Edition.

In 1886 the first number of Walden's A.B.C. Pocket Guide was issued at a price of \$1.00. Although the guide has grown and values have increased the price is still \$1.00, and may be obtained for that price from the Walden Publishing Company, 132 Nassau St., New York.

This little book, which measures $4\frac{1}{2}'' \times 6\frac{1}{2}''$ contains a lot of valuable information in a readily accessible form. The largest section presents a list of paper distributors in the United States, arranged by States and sub-divided alphabetically by cities. This section is printed on blue paper. The last few pages of this section contain names of paper dealers in Canada.

The next section is a list of paper mills in the United States and Canada, printed on buff paper. Under each mill is given a list of officers, the kinds of paper made, the number and kind of machines with the width of trim and total daily capacity.

Following this comes the last section, which contains a list of manufacturers of coated and glazed papers, card-board and box board.

For any one who wants to be sure of getting a dollar's worth for a dollar we know of no better proposition to the paper men than Walden's A.B.C. Guide.

Subscribers are requested to correct the address of Linton & Scott, on page 172. It should be 110 West Fortieth Street. In the Index to Advertisers kindly change the page number of the Pulp & Paper Trading Company from 11 to 111.

Permission to sell \$100,000 of its common stock in the State of Illinois, has been granted to the Beaver Cove Lumber and Pulp Co., of Vancouver, B.C.

Accomplishments of the Canadian Paper Trade Association

Mr. Ellis must be a mind-reader, for on the very day we wrote Secretary Martin, of the C. P. T. A. for a review of what had been done, the following letter was received. We think this is a very creditable record and, in congratulating Mr. Ellis and his hardworking associates, would say: "Let the good work go on."

I have thought that it might be useful for me at this time to forward to the Members of our Association a short resume of the results which have been accomplished since the Association has been formed. This may perhaps be of particular interest to members who, on account of their location, have not had an opportunity of attending meetings of the various Sections. The Association actively got under way about the first of May of this year and some considerable progress has since been made, in completing its organization and adding largely to its field of usefulness.

I am noting here some matters which illustrate the work which is being done:—

Bond Papers—An agreement has been reached by which the labeling of any paper that does not come up to recognized standard of Bond Papers, has been discontinued.

Selling Lists—Steps have been taken leading to uniformity in the publication of lists.

Brands—The members have listed with the General Secretary, all brands and trade names used by them. Members adopting any new brand or trade name, are expected to communicate with the Secretary and ascertain whether this name is already in use by some other member. A number of these inquiries have been directed to the Secretary's office and in several cases, duplication has been avoided.

Broken Packages—Some of the Branches have agreed, locally, on a definite understanding with respect to the extra charge on all broken packages.

Terms—An effort is being made to have terms adopted by the members of the Association throughout Canada. It is possible that there may be some further changes made in this respect later on.

Economy and Production—The Association has been co-operating with the Manufacturers in every possible way with the idea of economizing in lines, weights and colors, and some very useful progress has been made in this respect. The adoption of standard substance weights, by the Manufacturers, was undoubtedly very much simplified by the active co-operation of the Association.

Schedule of Percentages—Efforts have been directed along the lines of ascertaining what would appear to be the proper advance on cost for adoption by paper jobbers. Considerable data has been collected along these lines and it is hoped that this will eventually result in demonstrating to some of our Jobbers that their estimate of the cost of doing business is somewhat below the mark. In this respect, I may add that representations have been made to the Mills from time to time, resulting in some increases having been made in the resale price of some papers to take care of present extraordinary conditions.

Crates—Arrangements have been made by the Local Branches providing for uniformity with regard to the charges of crates.

Co-operation With Mills.—Efforts are being directed towards co-operation with the Mills in every way, to

avoid stocks being piled up in one part of the country, when there is an urgent need for the same stocks somewhere else. In these days of paper shortage no effort is misapplied which is directed towards an equitable distribution.

Job Lots—Several of our branches have adopted the principle of having the members list all job lots that they propose to dispose of.

Wrapping Section—Some progress has been made towards the organization of the Wrapping Section in both Ontario and Quebec. It is anticipated that the present unsatisfactory conditions of the market of Kraft papers will very soon be eliminated and it is hoped that more complete co-operation with the mills can be effected by working together.

A number of subjects have been brought to the attention of the association by various members, such as: the classification of freight ratings of certain kinds of paper; the various rulings of the War Board, the news-print situation, etc., all of which matters have received attention.

On the whole, I think our association has well justified its existence and that it will find still greater fields of usefulness. We are all working on the same identical problems and the solution of these problems can much more readily be obtained by working together, than by each jobber finding some way out for himself.

In conclusion, I would like to add that the benefits of the association can be increased by each member bringing to the attention of the association, through its Secretary, such matters as may appear to them from time to time to be open for discussion and adjustment.

Yours faithfully,

JOHN F. ELLIS, President.

MINISTER OF MARINE APPRECIATES PAPER TRADE.

The Hon. C. C. Ballantyne, Minister of Marine and Fisheries, has notified the Canadian Pulp and Paper Association of his department's willingness to do everything possible to facilitate the shipping of Canadian pulp and paper products to foreign countries and has asked for definite information as to the tonnage required, the destination of the proposed shipments, etc.

The action of the minister is the result of a memorial addressed to the Government setting forth that the lack of shipping space available to Canadian shippers is proving a serious handicap to the shipment of many orders already secured in the various markets of the world and asking the Government to give immediate consideration to providing adequate shipping accommodation.

It is understood that the shipping chiefly desired is to trans-Pacific destinations. Such little space as is now available is said to be held at prohibitive rates so far as pulp and paper exports are concerned.

The council has also asked the Government to take into consideration the question of abolishing the present business profits tax, on the ground that its proceeds are no longer needed to carry on the war, while they are needed for the expansion of industry and the increased and constant employment of labor.

In the manufacture of umbrella handles over seventy different kinds of woods are used.

Technical Section

Of the Canadian Pulp and Paper Association

DAWE'S CARDS ARE OUT.

A. L. Dawe, the popular secretary of the Technical Section and the Canadian Pulp and Paper Association has sent out cards for a great event. It is not an announcement of matrimonial intentions but in regard to the annual gathering of the good fellows who handle the balances, burettes, carbon dioxide recorders and are otherwise interested in scientific research and control in connection with the industry.

Mr. Dawe says the hotels of Montreal are already nearly all booked to the limit for Convention week. It will be necessary to make reservations right away or run a chance of camping out on a bench in the park.

W. B. CAMPBELL LEAVES FOREST PRODUCTS.

W. B. Campbell, who has been assistant superintendent of the Forest Products Laboratories at Montreal since their establishment, has gone into commercial work. Mr. Campbell begins the new year as vice-president of Process Engineers, Ltd., of Montreal and New York. His wide experience in chemical engineering and research and his pleasing personality should insure success in the new field.

We surely wish you a happy and prosperous New Year, "W. B."—especially since we have met little Miss Nancy Campbell.

REVIEW OF RECENT LITERATURE.

M-8. How efficient is your packing? W. F. Schaphorst. *Pulp and Paper*, 16, No. 44, p. 977, (1918). A method of determining friction loss due to packing is given.—R. C.

N-4. Boiler plants in paper mills. D. Brownlie, B.Sc., *World's Paper Trade Rev.*, 70, No. 8 (1918). An article dealing with the investigation of the efficiency of boiler plants. The average figures relating to 21 mills show a boiler efficiency of 70.6%. A table of results is given covering the tests.—D. E. S.

N-5. The storage of bituminous coal. E. Matheson, *Paper*, 22 (1918), No. 11, pp. 35-38. Resinic matter of the coal substance proper, is chiefly responsible for the development of heat (through gradual oxidation) which results in spontaneous combustion and that certain physical conditions, subject to control, are the chief factors which determine the continuance of rise in temperature to the point of ignition of the coal. The deterioration of coal begins with the mining and consists in its first stage with a loss of combustible gases. The rate of absorption of oxygen by a given coal depends on the size of the lumps and is more rapid in the finer particles, probably approximately proportional to the exposed surface. A successful method of storage must either prevent or check the absorption of oxygen to such an extent that the generation of heat will not proceed more rapidly than the loss of heat through radiation. The temperature should be kept as far below 80° C. (180° F.) as possible. The coal should be either stored in bunkers, which have surfaces large in proportion to the bulk, or air be circulated through the heaps in iron pipes in such a way, that it does not come in contact with the coal. The U. S. Bureau of Mines

recommends the use of air-tight bottoms and sides, for example, of concrete and the accumulation of a protecting layer of lime slack on the surface.—E. K. M.

P-1. Paper mill accidents. National Safety Council. *Paper Mill*, 41, No. 41, p. 14 (1918). A reprint of a pamphlet on "Safe Practices in Paper and Pulp Mills" issued by the National Safety Council is given.—R. C.

P-1. Advertising accidents in paper mills. By Charles B. Milner, *Paper*, 23 (1918), No. 5, p. 11-13. Methods and results of safety work in the plant of the Hammermill Paper Company.—E. K. M.

P-2. Developing trained specialists. By Katherine M. H. Blackford, M.D., *Paper*, 23 (1918), No. 4, p. 14-15. Fitness for the job, an essential of safety in paper mill work.—E. K. M.

Q-1. The housing problem in mill communities. George E. Williamson, *Paper*, 23 (1918), No. 3, p. 11-12 and 17. The policy adopted by the Strathmore Paper Company has proved successful.—E. K. M.

P-0. Progress in accident prevention. C. E. Carpenter, *Paper*, 22 (1918), No. 25, pp. 14-17. Address at a meeting of the Ontario Pulp and Paper Maker's Safety Assn., Ottawa, March 15, 1918.—E. K. M.

R-1. Hunsfos Mills, Norway. *Tidsskrift for Papirindustri*, Sept. 15th, 1918, No. 18, p. 275. A description of a visit to Hunsfos Mills, giving capacity of mills, size of machines, etc., accompanied by photos.—G. Hg.

R-2. Pioneer papermakers of England. *Paper*, 23 (1918), No. 4, p. 11-13. By F. Ashford White. Historical notes on the origin and development of paper-making in the British Isles.—E. K. M.

R-4. Trade acceptances; their nature and their use. J. E. Cookson, *Pulp and Paper*, 16, No. 44, p. 977 (1918).—R. C.

R-5. The Finnish paper industry. *Paper*, 23 (1918), No. 2, p. 15 and No. 3, p. 15-17. Its development and present condition.—E. K. M.

R-5. Status of the Russian paper industry. *Paper*, 23 (1918), No. 2, p. 23-25. Notes on the growth and development of papermaking in Russia since early times.—E. K. M.

R-12. Why newsprint is high. *Paper*, 23 (1918), No. 5, p. 15-18. Concrete facts which show the great increase in the cost of making it. (From a statement by the International Paper Company.)—E. K. M.

R-12. Newsprint price in U. S. raised to \$3.50. *Pulp and Paper*, 16, No. 41, p. 912 (1918). The rulings of the Court of Appeal is given.—R. C.

R-0. National research. W. B. Campbell, *Pulp and Paper*, 16, No. 40, p. 883 (1918); No. 41, p. 905 (1918). A sketch is given of the requirements of an ideal research laboratory and organization. An exposition is made of the advantages of centralizing such work.—R. C.

R-0. Launch paper saving campaign. *Paper Mill*, 41, No. 40, p. 7 (1918). Various paper conservation measures advocated by the War Industries Board are given.—R. C.

R-0. Chemistry in the pulp and paper industry. J. N. Stephenson, *Can. Chem. J.*, 2, 208 (1918).—(Chem. Abs.)



UNITED STATES NOTES

Despite the decided slump in the paper market and a slowing down here and there, paper makers view the outlook for the future with optimism. The present period of depression is looked upon as temporary, and though manufacturers in some sections are inclined to close down their plants, there are indications to show that a trend toward better conditions may confidently be looked for. The danger of a serious slump in the future is being discounted.

The report current for some time that all but two of the Swedish pulp mills are on the American blacklist, has been officially denied by the Bureau of War Trade Intelligence.

Recommendations for buying paper for the Government Printing Office were submitted last week to the Congressional Joint Committee on Printing by the paper specification committee. An important departure is to be made with respect to the purchases, which are to be taken in definite quantities and only for a three month period, instead of for the whole year as heretofore. A decision is to be reached at the end of that period as to purchases for the remainder of the year.

The extensive tract of forest in the Adirondaeks known as the Granshoe Club preserve has just been acquired by the A. Sherman Lumber Company. It contains 2,600 acres of fine second growth timber, is valued at \$34,000, and is located southwest from the headwaters of the Raquette River. The Long Pond Land Company, holding corporation for the club, disposed of its stock to the lumber company. The club retains its preserve rights.

With the unexpected termination of the war there came an unprecedented demand this year for holly paper during the holiday season. The Tuttle Press Company, which manufactures much of this product, has been rushed this year as never before. The company offices in Chicago were continually besieged. The demand could hardly be supplied, even with the mills at Appleton, Wis., running to their utmost capacity.

Production statistics based on reports of 822 pulp and paper mills in the United States are given out by S. L. Willson, chief of the manufacturing section of the Pulp and Paper Division of the War Industries Board. Chief Willson has just wound up the affairs of the bureau prior to its disbanding. The reports show a total wood pulps production of 3,504,718 tons. The total paper production was 6,595,627 tons. The transportation of materials and product, a total of 4,204,845 cars were used. An average of 1.4 tons of coal to one ton of paper was required, also 4.3 tons of materials to every ton of paper produced, and the per capita consumption showed 110 lbs.

A survey is soon to be made by War Department engineers of the Miami and Erie Canal from Toledo to Cincinnati with a view to deepening and enlarging its facilities. Keen interest is being taken in the project by paper makers who have been using the waterway for shipping logs, pulp and raw materials.

Following the recent fire which gutted its plant at Hamilton, Ohio, the Leshner Paper Stock Company

is contemplating removal to Lockland, a paper mill centre near Cincinnati. The fact that the company will be much nearer to the concerns with whom it does its main business is a factor largely prompting the move. The damaged plant in Hamilton is to be rebuilt and repaired, and will be used to take care of the waste paper branch if removal occurs.

The affairs of Shryock Brothers of Downingtown, Pa., are being conducted personally by S. S. Shryock, Sr., a septuagenarian, who has come temporarily out of retirement because both his sons are down with the influenza. He makes the daily trip between Philadelphia and Downingtown and disposes of the routine as though he hadn't been out of harness at all.

Judge Edwin B. Parker, Priorities Commissioner, has just made the announcement that "effective Jan. 1, 1919, all the rules, regulations, and directions of every nature whatsoever issued by the Priorities Division of the War Industries Board, are cancelled, and all pledges heretofore made on the suggestion or the request of the Priorities Division are revoked."

Construction work on the new paper mill of the Onida Paper Company at Stevens Point, Wis., has been completed and machinery is now being installed. Tissue and light-weight paper are to be the principal product. At the start of production employment is to be given to about 100 men. The mill will run its own water power.

Conditions in the paper industry, eastern states, are summarized by the monthly report of the Federal Reserve board about as follows:

In the New York district, demand has been outrunning the supply. In district No. 3, Philadelphia, mills manufacturing book and high grade printing paper are running on a 75 per cent basis due to a labor shortage and a scarcity of wood pulp. Domestic consumption is not more than 40 per cent normal, but excess in production is absorbed by demand for export. As wood pulp scarcity is likely to continue until next summer, the early 1919 output of fine printing papers may be far from normal. Relief may possibly come with the flow into the country of the large tonnage of pulp accumulated during the war in Scandinavian countries following the release of ships to carry it. Atlanta operators are declared to be optimistic as to the demands for naval stores, especially rosin, due to the contemplated increase in ocean tonnage during the next six months.

N. E. Wainwright, who for some time past has been connected with the J. W. Butler Paper Company, is leaving the first of the year, to accept a responsible position in the export paper business.

UNCLE SAM'S PAPER BILL.

The Government printing office bill for paper supplies and printed matter for the fiscal year ended June 30, 1918, according to the annual report of Public Printer Cornelius Ford sent to Congress, was \$13,158,535.31, as compared with \$7,392,693 for the previous fiscal year. This is an increase of 78 per cent, in costs, including output, wages and cost of stock on hand and ordered prior to July 1, 1918.

PULP AND PAPER NEWS



Many friends in the paper and publishing lines will learn with regret of the death of William Colwell, who passed away in Wallaceburg, Ont., last week in his seventy-eighth year. He had been active in the paper and stationery business for more than fifty years and had published newspapers in several towns in western Ontario, being the founder of the Wallaceburg News. Of late years he had conducted a book store and stationery business. He leaves a wife and family of four sons and five daughters.

W. J. Finlay, of the Stratheona Paper Co., Strathcona, Ont., was in Toronto last week on business and called upon a number of members of the trade.

The Toronto Paper Mfg. Co., Cornwall, Ont., has sent to its customers and friends in the trade the usual, neatly gotten up souvenir known as the "Daily Reminder," which is bound in leather and is a complete diary for the year 1919.

Among the large paper firms, who forwarded optimistic greetings to the trade in which expressions of confidence and assurance of a good year, a business during 1919 are featured, are Barber-Ellis, Limited; Toronto; Price Bros. and Co., Quebec; the Rolland Paper Co., Montreal; E. B. Eddy Co., Hull, Que.; Howard Smith Paper Mills, Limited, Montreal, and others.

P. L. Colbert, manager of the National Paper Co., Valleyfield, Que., spent the Christmas holidays in Toronto and has removed his family to his new home. He reports that the plant is very busy and several improvements have been recently carried out whereby production has been increased by one-third. An addition, one hundred feet long, has been built to the drying room.

M. J. C. Billingham, of Kalamazoo, Mich. formerly of Toronto, who is widely known as a paper mill engineer, was in Toronto during Christmas week renewing old friendships in the trade.

George C. Winlow of the selling staff of the Canada Paper Co., Toronto, has returned from an extended business trip to Winnipeg and points west.

H. W. J. Smith, of the Rosenfeld & Co. Proprietary Co., who have offices in Sydney, Melbourne, Adelaide and Brisbane, Australia, was in Montreal and Toronto this week calling upon the paper trade and looking after supplies in all lines of paper for his firm.

F. A. Ritchie, of Ritchie and Ramsay, Limited, Toronto, recently spent a few days in New York on business, and reports that the trade in that city is looking for a record year in the paper manufacturing line.

The Brantford Courier, which has been 57 years in business, is the latest daily in Ontario to cease publication. The good-will and subscription list were purchased by the Brantford Expositor and the plant will be dismantled. During the past year in Ontario alone, fully a dozen weekly and daily papers have either gone out of existence or been amalgamated with others owing to the high cost of production, wages, supplies, etc. It is rumored that two or three others may follow suit in the near future.

The plant of the Howard Smith Paper Mills at Crabtree Mills, Que., is now turning out Progress bond papers, samples of which have been recently sent to the trade. The specimen sheets have been favorably received and everything in connection with the mill, which will specialize on this line of paper, is now running smoothly. Sulphite bond is turned out in white and six colors and in all standard sizes.

E. A. Crippen, of Toronto, formerly secretary and sales manager of the Houtt Paper Mills, Camden East, Ont., who has been connected with the trade for many years, has started in business for himself as a manufacturers' agent and has his office at 79 Spadina avenue, Toronto. Mr. Crippen has been appointed exclusive selling agent in Canada for the Sutherland Paper Co., of Kalamazoo, Mich., manufacturers of pure vegetable parchment paper, waxed paper, paraffined cartons and folding boxes. He also represents several other firms who manufacture special lines for the trade.

Owing to a gas explosion setting off the sprinkler system several thousand dollars damage was done to the stock of the Southam Press, Limited, in the basement and second floor of their building at 19 Dunnean street, Toronto. The loss by fire was very small, but the water wrought havoc to a large extent.

The inside staff of the Victoria Paper and Twine Co., Limited, Toronto, received a bonus of ten per cent on their year's wages during the Christmas period in recognition of the faithful work done during 1918 and, needless to add, the gift was greatly appreciated by all the recipients.

N. L. Martin, of Toronto, Secretary of the Canadian Paper Trade Association, while in New York recently, had a conference with W. C. Ridgeway, secretary of the American Paper Trade Association, who complimented the Canadian body on the vast amount of work it had carried out during the few months it has been established, and predicted a great future of usefulness and expansion for the organization. A session of the book and writing section of the Canadian Association was held in Toronto this week at which there was a representative attendance. A general meeting of the Association will be held at the Ritz-Carlton Hotel, Montreal, on Wednesday, January 15th, when several matters of importance will be taken up and a conference held with the manufacturers of book and writing papers to consider leading post-war problems.

The Victoria Paper and Twine Co., Limited, are now established in their own premises in Montreal, at 382 Notre Dame street west and 127 St. Maurice street, having removed from Victoria square.

Work on Section three of the Welland ship canal in the vicinity of Thorold will be proceeded with in the very near future. The estimated cost is in the neighborhood of nine million dollars and the section is one of the most important and expensive to build on the waterway. The contract has been awarded to Doheny, Quinlan and Robertson.

S. J. Frame, secretary of the Canadian Paper Box Makers' Association, was in New York this week on business.

The Canada Paper Co., Windsor Mills, Que., are again sending out their regular quarterly calendars for the coming year. The printing for the first quarter of 1919 is done on robin's egg fibre stock cover paper, in red and blue.

The staffs of the Canada Paper Company's warehouses in Montreal and Toronto were the recipients of a ten per cent bonus during the recent Yule-tide season, which donation was thoroughly appreciated.

Ernest Gartshore, the fourteen year old son of Edward Gartshore, Sault Ste. Marie, Ont., was instantly killed in the board mill of the Lake Superior division of the Spanish Pulp and Paper Mills. He met his death by the falling of a shaft which he was apparently fixing. No one witnessed the accident. The boy's body was discovered by a fellow workman during the afternoon.

MR. T. A. WELDON PASSES 65TH MILESTONE.

New Year's Day is always a memorable one with Thomas A. Weldon, Vice-President of the Provincial Paper Mills Co., for it was on that occasion sixty-five years ago that he first saw the dawn. For many years past he has always spent the first day of each New Year with his parents who reside in St. Thomas, Ont. His father, James Weldon, is ninety-seven years of age and his mother eight-nine, and after a married life of over sixty-seven years, both are enjoying excellent health.

The Weldons are a long lived race and came from Tyrone, Ireland. Thomas Weldon, the grandfather of T. A., died at the age of one hundred and four years and his wife, when she passed away, was well beyond the ninety mark. It is the same story in the maternal branch of the family and T. A. Weldon's grandparents on that side both lived to be over ninety.

Mr. Weldon has been in the paper game for thirty-five years and if precedent in the matter of longevity is followed, looks good for another thirty-five years of activity.

While he was out of town one day on a trip for the grocery firm with which he was connected, the late Mr. E. B. Eddy arrived in Toronto and made inquiries for him. On returning that night Mr. Weldon was soon down at the Queen's Hotel, Toronto, to meet Mr. Eddy, who told him that he could go to work right away. Not a word was mentioned with respect to salary. Mr. Eddy did not name any figure and Mr. Weldon did not broach the subject of remuneration desired. He did not know whether the amount was to be large or small; what he particularly desired was to get into the paper game and establish a connection. When the first monthly cheque came to hand it was much more generous than Mr. Weldon had anticipated. For twenty-five years he was in the service of the Eddy Co. and between the honored head of the firm and himself there was always a warm bond of friendship which continued up to the day of Mr. Eddy's death.

When Mr. Weldon first became attached to the Eddy Co. they were then making matches and certain lines of woodenware, their sulphite plant has just begun operations and they were thinking of branching out in the newsprint and general paper lines. After being on the road a year Mr. Weldon was requested to take charge of the warehouse which they intended

opening in Toronto to carry stock. For nearly a quarter of a century Mr. Weldon faithfully looked after and developed the immense business which the Eddy firm do in Toronto and the surrounding country. Some ten years ago, in company with the late George R. Coppington and others, he bought the Montrose paper mill at Thorold (then in liquidation) and removed to that town to reside. The plant has more than doubled in output and new buildings have been erected since that time, until now about thirty tons daily of book, bond, writing and limenette papers are turned out. Further expansions took place and the Montrose mill became part of the great undertakings of the Provincial Paper Mills Co., the largest concern of its kind in the Dominion, at the head of which is I. H. Weldon, brother of T. A. Weldon. The Barber mill at Georgetown and the plant of the Canada Coating Mills at the same place were also acquired and the head offices of the company established in the Bell Telephone Building, Toronto.

Mr. Weldon is Vice-President of the Provincial Paper Mills Co., and manager of the Montrose division. Many men, who are at the head of paper concerns to-day were only boys in offices when he first became acquainted with the game. He was then known to them as "Tom" and to-day he is the same.

NEW MANAGER AT CHICOUTIMI.

The directors of the North America Pulp and Paper Company have appointed J. E. Houseman, for many years on the staff of the Molsons Bank, as vice-president of the company and general manager of the Chicoutimi Pulp Company, the St. Lawrence Pulp and Lumber Company, and the Roberval and Saguenay Railway, all of which are subsidiaries of the North American Company. The headquarters of Mr. Houseman will be at Chicoutimi, Que.

R. H. CAMPBELL RECOVERED.

Winnipeg, December 18.

R. H. Campbell, Dominion forestry supervisor, who was seriously injured in a railway collision at The Pas some weeks ago, has entirely recovered, and is leaving for Alberta on an official trip within a few days. On his return from the west, he intends inspecting some nurseries in connection with re-afforestation in the United States, and will then proceed to Ottawa, where he will resume his official duties.

NEW SULPHUR COMPANY TO START.

Manufacturers of sulphite pulp will be interested in knowing that the Texas Gulf Sulphur Company expects to start sulphur production from its mine at Maagorda, Tex., about February 1, 1919.

The company, of which W. H. Aldridge, 14 Wall St., New York, is president, has a plant under construction—now nearly completed—which will enable it to produce sulphur at the rate of at least 1,000 tons per day.

It is stated that the size and grade of the deposit make it one of the important sulphur reserves of the world. In addition, it has very favorable working conditions, such as good rail facilities, nearness to tide water and to fuel oil fields, a large easily obtainable supply of good water—which is important as large volumes are used in mining—and a most modern plant, embodying the latest improvements for efficient and cheap operation.

THE MARKETS

CANADIAN MARKETS.

Toronto, January 1.—The first item of importance to the trade in the New Year will be the hearing of the argument on the appeal of the newspaper publishers before the Paper Control Tribunal in Ottawa on Wednesday next, January 8th, against the price of \$69 fixed by Controller Pringle in July last. Preliminary hearing came up on November 14th last, and the matter finally went over until January 8th. Both sides have been carefully preparing facts and figures for the exhaustive argument, and both express confidence of winning. The battle will be a royal one and upon the contentions presented, the Court will admit the right or otherwise to call for new evidence should it appear necessary or desirable. The result of the hearing next week is awaited with much interest.

Another item of great moment to the pulp and paper trade generally is the question of export, and representations have been made to Hon. C. C. Ballantyne, Minister of Marine, at Ottawa, to provide the necessary ocean tonnage. It is contended by the paper manufacturers that the present situation needs speedy and effective relief if Canada is to take her proper position as a great pulp and paper producing country in the world markets.

All the mills and jobbers are now taking inventories and getting ready to present their annual statements. Naturally during the holiday period trade is quiet and sails are being set for the business voyage of 1919. Matters are not expected to pick up until later on in the month, but the outlook on the whole is regarded as satisfactory. With respect to prices there is some difference of opinion. Certain jobbers expect there will soon be reductions in a number of lines of paper, but manufacturers hold to the contention that as long as the cost of production, wages, supplies, etc., keep up, there is no expectation of a drop. There the matter rests at present, and prophecy will have to continue a few weeks at any rate, or until something more definite is in the air.

One leading firm, in an announcement to the trade, says that "the future is bright, with promise for Canada, and reconstruction in Europe affords unequalled opportunity for foreign trade. Great domestic undertakings delayed by the war insure active and internal development, and with good wages, good markets and good prices, surely the future is bright."

This probably expresses the view of the majority of the paper manufacturers at this juncture.

It is fitting to review prices in all lines of the paper trade as they existed a year ago, and as they obtain to-day. In its issue of November 14th last, just after the signing of the armistice, the PULP & PAPER MAGAZINE presented a resume of trade conditions as they rose and fell, developed and stagnated during the four years of war, spoke of the underlying causes, and told how the manufacturers had overcome many difficulties which at times were almost staggering. Out of the turmoil and general upheaval there came good business and the close of the war found all plants busy with lots of orders on hand and prices fairly satisfactory to all concerned.

It is not necessary to rehearse the points covered in that edition, but an interesting comparison in prices is presented in the subjoined table. It will be seen that there have been substantial increases in nearly every line which have been brought about by the rising scale of wages, the high cost—ever increasing—of raw materials, advanced freight rates, coal, pulp, pulp wood, scarcity of help and many other contributing circumstances, not to speak of the additional outlays for upkeep machinery, dyes, felts, cottons sulphur, bleach, satin white, etc.

There has not been a drop in anything as yet since the armistice was signed, although labor is more plentiful and more efficient, and production has been speeded up and orders in arrears are now being overtaken. Mills are still busy and manufacturers are not worrying about the outcome. In some plants more inquiries have been received of late than for a considerable time, transportation is good, the anxiety regarding fuel has been overcome, but the scale of living does not descend, and may not do so for many months. This is the situation as it exists at present. There is an excellent outlook for export if ocean carriage is provided and rates are reasonable. On the whole the future seems to be bright and there is little anxiety in the minds of the producers.

Figures are always a dry subject, but a comparative schedule will tell the story of prices in a few words. Here are quotations taken from the market reports of the PULP & PAPER MAGAZINE of a year ago and those that hold to-day. Cut out the figures, as they may prove interesting for further reference.

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES ²⁰⁷⁴ ₂₀₇₅ MURRAY HILL, NEW YORK

Write us when you
have any surplus
of

Ground Wood

Bleached or Un-
bleached. We are
always in the mar-
ket.

Paper.

	Jan., 1919.
*News rolls at mill, in earload lots	\$3.45
*News rolls in less than earload lots	\$3.52½
*News sheet at mill, in earload lots	\$3.80
*News sheets in less than earload lots	\$3.92½
xBook papers (earload), No. 1	\$9.75
xBook papers (ton lots), No. 1	\$10.00
xBook papers (earload), No. 2	\$9.50
xBook papers (ton lots), No. 2	\$9.75
xBook papers (earload), No. 3	\$8.25
xBook papers (ton lots), No. 3	\$8.75
Ledgers	18c up
Sulphite bonds	13½c
Light tinted bonds	14½c
Dark tinted bonds	16c
Writing No. 1 (S. C.)	13c up
Writings No. 2 (M.F.)	12½ up
Coated book and litho, No. 1	\$12.25
Coated book and litho, No. 2	\$11.25
Coated book and litho, No. 3	\$10.50
Coated book and litho, colored	\$12.50 to \$14.00
Grey Browns	\$5.25
White Wrapping	\$5.25
Fibre	\$7.35
Manila, No. 1	\$7.35
Manila B.	\$5.60
Tag Manila	\$7.00
Unglazed kraft	\$9.25
Glazed kraft	\$9.25
Tissues, bleached	\$1.55 to \$2.20
Tissue, (unbleached sulphite)	\$1.35 to \$1.75
Tissues, cap	\$1.00 to \$1.40
Tissues, manila	90c. to \$1.20
Natural greaseproof	17c
Bleached greaseproof	22c.
Genuine vegetable parchment	22c.
Bleached white glassine	23c.
Drug papers, whites and tints	9c. to 10c.
Paper bags, manila (discount)	35 per cent.
Paper bags, kraft	27½ and 10 per cent.
Confectionery bags	34 per cent.
Gusset bags (manila)	35 and 15 per cent.
Straw board	\$75.00
Chip board	\$75.00
Vat lined chip board	\$80.00
Filled wood board	\$83.00
News board	\$80.00
Double manila lined board	\$90.00
Manila lined folding board, chip back	\$87.50
Pulp folding board	\$95.00
Jute board, No. 3	\$75.00
Tag board	\$155.00
White patent coated board	\$115.00 to \$130.00
Grey folding board	\$115.00
Pasted board	\$95.00

*For Canada only.

x—These prices are for machine finish, super-calender one-half cent higher.

Pulp.

F.O.B. Mill.

Groundwood pulp	\$31.00 to \$33.00
Sulphite, news grade	\$75.00 to \$85.00
Sulphite, easy bleaching	\$95.00 to \$100.00
Sulphite, bleached	\$150.00 to \$160.00
Sulphate	\$105.00

NEW YORK MARKETS.

New York, December

28.—The dullness ruling in the paper market for some time reached the maximum intensity this week. Business has been virtually at a standstill. Buyers in general have remained out of view and the trade has presented the customary between Christmas and New Year holiday aspect. Manufacturers, jobbers and consumers are now in the midst of compiling inventories, and are doing little to stir up business, knowing that efforts in the latter direction would meet with scant success for the present. Under such circumstances prices on paper and raw material are mainly nominal. There has been hardly enough activity during the past few days to establish definite market values. Everyone has followed a single policy, that of reducing stocks to as low levels as possible so as to facilitate their inventory taking and to cut their assessments. What purchasing has been done has involved solely material directly needed. Mills have done very little buying of raw stock, while trade in new paper has been of narrow compass.

Indications are that soon after the New Year a period of record-breaking activity will set in for the paper industry. Aside from anticipations of a large export business, manufacturers of paper look for a brisk domestic trade in their product. It is an admitted fact that during the war jobbers and consumers alike have kept their stocks of paper down as low as they possibly could afford to do without injuring their business. High prices and the danger of a break in

Jan., 1918.

	\$2.50
	\$2.75
	\$3.25
	\$3.50
	\$9.25
	\$9.50
	\$9.00
	\$9.25
	\$7.00
	\$7.50
	15c up
	11½
	12½
	13½
	11
	10½
	\$12.25
	\$11.25
	\$10.50
	\$14.00
	\$4.25
	\$4.25
	\$6.75
	\$6.75
	\$4.50
	\$6.25
	\$8.25
	\$8.25
	\$1.80
	\$1.60
	\$1.15
	\$1.00
	13c.
	16c.
	22c.
	16c.
	9c. to 10c.
	20 p.c.
	35 p.c.
	25 p.c.
	20 and 15 p.c.
	\$70.00
	\$70.00
	\$75.00
	\$80.00
	\$75.00
	\$85.00
	\$82.50
	\$90.00
	\$70.00
	\$150.00
	\$125.00
	\$100.00
	\$90.00

\$10.00 to

WOOD PULP TRADING CO., Ltd.

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values at any time compelled them to pursue a most conservative policy and to confine their buying within the bounds of immediate requirements. The probabilities now are that just as soon as prices on paper become stabilized and the uncertainty which has reigned since the signing of the armistice is cleared to a sufficient degree to give business a better insight into the future, jobbers and consumers in general will commence buying on a more normal scale and will seek to bring their stocks nearer to pre-war levels. A move of this kind seems bound to result in a heavy demand for paper of all grades. Stocks in every quarter at present are at an unusually low ebb. Consumers have bought in a hand to mouth fashion for months, and indications are that they have virtually no surplus supplies. Jobbers also have placed orders with mills only for such quantities of paper as they have been provided with an immediate outlet among customers, and the stock of the average jobbing house, in New York at least, is of insignificant volume.

Quotations on the various grades of paper have undergone no alteration this week. Manufacturers continue to show no disposition to lower prices and there has been little or no occasion for their doing so during the past few days. Every sign points to a maintenance of paper prices for some time to come. There may be, of course, some recession in certain grades but, generally speaking, the chances seem to favor high prices. Certainly the cost of production has not decreased to any appreciable extent as yet. Some kinds of raw material have eased off in price, but the chief commodity entering into the manufacture of paper—wood pulp—is holding firm, while

labor is fully as expensive as it has been at any time during the last two or three turbulent years, and gives promise of continuing so. Until producing costs decline it therefore seems inevitable that prices on paper must remain high.

Newsprint is moving into consuming channels in a steady way and at firm prices. Demand has been slightly quieter this week — a condition customary during the holiday season—but shipments from mills continue to closely approximate production. Book papers are dull, and although a downward tendency has been apparent in quotations, prices have held unchanged. Writing papers are little sought and prices are nominal. Buying is halted temporarily, but mills have not altered their quotations, and those placing orders have found it necessary to pay relatively the same figures as previously. The only strong factor in the tissue paper market is the Government demand for roll tissue. Aside from this there has been little fresh demand, yet prices are maintained. Coarse papers are in equally as dull a position as other grades. Quotations, however, show no material change. The market for boards is quiet and rather easy. Consumers are placing few orders and some mills have cut their prices a bit. Chip board is now available at \$60 per ton, and possibly at lower figures, while news board can be bought at \$65.

The groundwood market is firm. Newsprint mills are absorbing quite some tonnages from the open market, and grinders are quoting \$30 a ton for No. 1 freshly ground air dry mechanical pulp and are generally refusing to entertain offers at cheaper prices. Freezing temperatures in most producing sections have



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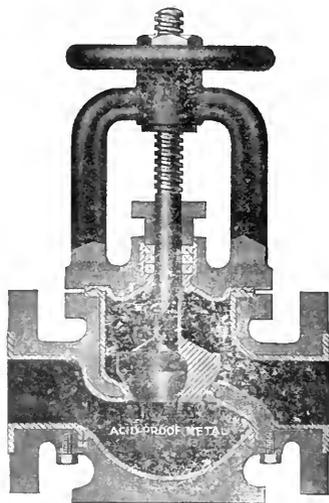
PRICES AND SAMPLES ON APPLICATION

acted to curtail the output, and this has proven the principal sustaining factor.

Chemical pulp is almost entirely neglected by buyers for the moment. Demand has been exceptionally quiet and what sales have been accomplished have involved merely such quantities as have been immediately needed by consumers. There has been no marked fluctuation in prices, however. Bleached sulphite is sagging in price somewhat owing to the sharp decline in the cost of bleaching powder, but this is about the only grade of pulp showing weakness. Producers appear little concerned over the present dearth of demand. They view this only as a temporary condition and look for a heavy movement of pulp soon after the New Year. Domestic bleached sulphite is quoted at 5.50 to 6.00¢ per pound on contract and from 6.00¢ upwards for spot lots. Domestic unbleached sulphite of newsprint quality is held at \$75 to \$80 a ton at the pulp mill, while easy bleaching is priced at \$85 to \$90. Domestic kraft can be obtained at \$95 to \$100 per ton.

Rag stock remains in poor demand. Consuming mills have evinced little interest in the offerings of dealers and the week's business has involved too small a volume of material to have influence on values.

The market for waste papers is moderately active and prices are steady. Demand from consuming sources is strictly of a routine character, yet there is a sufficient volume of stock being moved to sustain values, and there is no great selling pressure in evidence. Producers apparently are not producing the tonnage of old paper that they do in more normal times.

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EDITORIAL

FEDERAL RESEARCH AND STANDARDIZATION.

The Honorary Advisory Council for Scientific and Industrial Research has proposed a plan for establishing a central bureau of research and standardization at Ottawa. It is proposed to have a combination of the kinds of work done by the Bureau of Standards and the Mellon Institute at Pittsburg. The movement is one that is greatly needed, and is a step that should have been taken long before this. The Council, through its subsidies, has already accomplished a number of important results and research work in certain lines will unquestionably lead to a more efficient utilization of Canadian resources, particularly along the line of supplying the Canadian people with Canadian fuel from peat and lignite beds that in some sections are very extensive.

There are many other problems, some of them of a fundamental nature, and others having to do with waste products and manufacturing operations in connection with Canadian industries. We have already pointed out in these columns a number of points where an organization such as the Council proposes would be of great assistance in the development of the pulp and paper industry. There are fundamental problems in the analyses of wood and other raw materials used in paper making. There are fundamental reactions in the processes that are still not understood, and there are large quantities of waste products which could be utilized to the general advantage of the Dominion. There are also minor problems which affect the operation of individual mills or the preparation of particular articles. The solution of each of these means so much added efficiency to Canada's greatest manufacturing industry. Other industries are equally handicapped for want of accurate information.

In addition to problems of a research character such as have been mentioned, there is also a great field for work in the standardization of raw materials and finished products. The need for this is emphasized by the imposing list of tests that have been made by the Bureau of Standards in Washington, which last year was more than 400,000. Canada, of course, would not have so many, but the number represented by a single industry as indicated by the application for work of this kind at the Forest Products Laboratories shows that among all our industries there should be provided proper facilities for making such tests.

The council proposes to establish such a laboratory

with an expenditure of some \$600,000 for initial building and equipment. In formulating its plans the council has consulted or visited the principal research laboratories in the United States and apparently is largely guided by the experience of the Bureau of Standards in Washington. The director of this Bureau has offered every assistance to his Canadian confreres, and some plan of co-operation may be worked out whereby some very special equipment need not be duplicated at Ottawa, at least for the time being. The peculiar feature of this portion of the Council's labors is that there has been no evidence of an attempt to join the organizations already doing portions of the work proposed. It seems strange that such a Council should get the cordial co-operation of research workers all over the United States and fail even to approach those under its very nose. We are aware that some Government officials are so narrow and short-sighted that they see only the glory of their own departments and their achievements, and fail to recognize an opportunity of co-operating for the good of the Dominion which they may be trying conscientiously to serve. There are in Ottawa and elsewhere a number of departmental laboratories with staffs and equipment that would go far toward putting a central bureau on its feet as a working organization. As far as we know there has been no real effort made to combine these scattered laboratories into the central organization. To do so would eliminate much duplication of expensive equipment, and would tend enormously to increase the general efficiency by concentrating specialized work into the hands of specialists in the several lines of investigation that must be undertaken by such a laboratory.

In combing the various departments and branches of the Government so as to concentrate their laboratory work, these departments need lose none of the credit for the results of investigations planned and carried out by them or under their direction. The research officer of the forestry branch could just as well "engage" the bureau's photographic expert to make a photomicrograph of a fibre sample as he could to engage a tinsmith to make him a piece of apparatus. And that suggests another advantage in the fact that he would not have to go outside to get an expert mechanic, carpenter or other artisan because the central bureau could afford to employ these experts.

Certainly the place to begin is with what we have, and we would earnestly and respectfully suggest that

the Research Council begin its effort by endeavoring to unite the forces already available. Considerable diplomacy and tact will of course be necessary to plan an organization that will bring the various parties harmoniously together, but it is a poor commentary on a democratic people if the branches of its own Government cannot unite for efficient research work when for four years we have looked with astonishment on the successful co-operation of nations in the making of war. If the council has not sufficient persuasive powers to effect such a co-operation and co-ordination, then it seems that legislation is in order to effect the union of our distributed efforts into one central bureau.

As a writer in the Bulletin of the Canadian Mining Institute puts it, "we must find the 'modus co-operandi.'"

STUDENT MEMBERS.

The council of the Technical Section has taken a very important step in submitting, for the consideration for a class of student membership in the Section. There are already three classes, full members, associate members, and junior members. The addition of the fourth class is greatly to be commended. One of the prime needs of the industry is to attract to it young men who are acquiring a knowledge of scientific principles and standards of culture at our schools and universities. We need in our mills and offices, yes, and as representatives of our industry in local and foreign markets, men who have the broad outlook and general training that comes from an efficient education. Some of these will have had technical training, others will have taken special courses in economics, and there is need in our industry for men of both kinds. There is special need in all our industries at the present time of men who can appreciate the problems, especially connected with the relations between the workman and the employer, and the obligation of both to the community at large. We need men who understand and believe in standards of citizenship with its opportunities and obligations. We need men who can see beyond their own office or mill windows into the broader relations of life and into fields beyond the boundaries of their own province and country. These men are not all to be found in our schools and colleges, but we may confidently expect that the majority of young people who complete college or technical school courses will have absorbed sufficient inspiration at least to enable them to think clearly along these lines. We need them for the great educational movement that has but begun.

We believe that the pulp and paper industry presents the greatest possibilities for growth and service and success that is to be found among the manufactures of this country. We want Canadian boys to appreciate this. We want them to look forward to a

life of satisfactory service and a generous return on the investment that they have made in an education. We want them to become the big and broad-minded leaders that we shall continue to need in the development of this industry, not only in extending its quantity and quality of product, but in the internal relations between management and men, and between this industry and others. We want men in charge of our manufacturing operations who have a good working knowledge of mechanical and chemical principles, and who are able to conduct their business according to scientific laws and the dictates of humanity.

The step that is proposed, and which undoubtedly will be taken is a fundamental one in bringing to the attention of students the possibilities in the pulp and paper industry. We wish the movement every success, and we only regret that none of our Universities have made a definite effort to include in their curricula more than a passing reference to our greatest manufacturing industry.

The announcement that Canada is to be called on to supply a billion feet of timber and lumber for the reconstruction of Belgium and northern France is very encouraging in the prospect of plenty of work for lumbermen. It seems quite possible that an urgent call for this material might cause an even greater competition for woods labor than exists now. It will certainly act to keep prices of pulpwood up for some time to come.

GOOD-BYE BLUE PENCIL.

The Canadian Fairbanks-Morse Company, always thoughtful of the friends, have sent our "Ever-sharp" pencils as souvenirs of the annual meeting of the Canadian Pulp & Paper Association. With the pencil, on which the name of the recipient is engraved, is an invitation to visit their interesting show rooms at 84 St. Antoine St., Montreal.

EDUCATING FOR FOREIGN TRADE.

An interesting article by Chauncey Depew Snow, of the U. S. Bureau of Domestic and Foreign Commerce in the "Swedish-American Trade Journal," tells of the growing interest in foreign trade education in the United States. Many agencies are at work, not only to stimulate a desire for information on foreign countries and instruction in language and customs, but also to satisfy this desire. It is a most commendable movement, and one in which the paper industry should take deep interest. Too much reliance has in the past been placed on foreigners to do our business for us.

An education is the only legacy most fathers are able to leave their children. This education should be of the best.

Making Men Like Their Jobs*

By ROBERT B. WOLF, M.E., Manager, Spanish River Pulp & Paper Mills, Ltd.

We all know that no man will loaf or slack on a job when he is interested in it. Neither will he slight the quality. It may be possible to work without interest, spurred on by some force of necessity, but the man working in such fashion has no heart in his work.

Why do men work half-heartedly, giving a minimum of return for their wages? Why are they so commonly dissatisfied, grumbling at petty annoyances, resentful of efforts to help them, and quitting their jobs apparently without reason? Why do they strike, and why are they so willing to listen to those who are capable of voicing their discontent? By men, of course, I mean all employees, men and women, in every branch of industry and merchandising.

One can answer glibly, of course, that people are naturally lazy, and that it is human nature to want to get something for nothing, that the demand for workers and the resulting high wages offered through necessity have unsettled a class of human beings which was particularly anxious to be unsettled. Or, if one wishes to be cynical, it is easy to remark that all are opportunists anyway, and that the workers just now see their opportunity. Such answers, however go only to results—they do not touch causes.

Intelligent workers and intelligent employers are more interested in locating causes than in tabulating results. They want to prevent labor diseases rather than treat them. For the present labor unrest, which we are right in calling "dis-ease," is one of the most serious things that confront the nation to-day. The worker is the biggest national asset, the most potent in war or peace. Labor is not an incident of industry. It is industry.

Is There a Cure for Unrest Among Employees?

Everything seems to indicate that we are approaching an industrial crisis in which the difference between employer and employee will grow more sharp and bitter; it is therefore vital that the employers who are directing the industrial situation use their utmost efforts to get down to fundamentals and cease confusing results with causes. This will be no easy task for the average employer, as he has so long been engrossed in the immediate manufacturing problems that he has given little thought to the larger and more important human problem.

I hope, therefore, that our experience will prove helpful. If the principles involved are universal, as I believe them to be, investigations in other lines of productive effort will confirm the conclusions, and as a result of the combined efforts of many minds, each completing and correcting one another, we should be able to evolve an industrial philosophy in America

which will enable us to avoid the threatening deadlock so seriously interfering with productive effort to-day.

The cause of practically all labor inefficiency—a prelude to labor disturbance—is lack of interest. There are only two ways out of the dilemma. The first is to create interest in work, and the second is to accept disinterestedness as inevitable and to speed up the treadmill so that a certain amount of work has to be turned out, interest or no interest. The first is the democratic American way, the second is the Prussian. In reality, there is no choice, as the Prussian method is now in the process of destroying itself.

Therefore, the way of expression rather than the way of repression is the only course open to us. At first sight it may seem impossible to change the monotony of routine work without extremely radical changes in operating conditions, but I know from actual experience that it is possible so to stage even routine work that it will draw and hold the interest of the worker to an absorbing degree.

In other words, the work ceases to be routine under methods which bring forth intelligent conscious control of the process on the part of the worker when we make him master of the machine instead of merely furnishing it with organs of sense.

It is just as necessary to get away from "rule of thumb" methods in directing human activity as it is in the process of handling materials which conform to natural laws. There are laws underlying human nature, and it is the function of the science of philosophy to organize these laws for the benefit of all those who wish to study them.

I worked at days' wages for several years in different paper mills in New York State and New England, so that I approached the problem from the practical side, working from the bottom up and not from the top down. It was this intimate association with the workers that gave me, first, their point of view, and later, the point of view of the operator.

While I had the direct object in view to learn the papermaking business, and cannot say that I found the work uninteresting, nevertheless I could see that most of the work was done by pure "rule of thumb"; that the workman in the big majority of cases had no real intelligent interest in his work, and no means of knowing exactly what he was doing.

Personally, however, I found a great deal to interest me in the working out of the underlying laws of the various processes, and to this conscious use of brain power I attribute the fact that I was able very quickly to learn to operate all of the various machines in the industry.

How the Worker Often Views Innovations.

The average workman, however, because he did not go into the industry equipped with technical training, could not of himself so easily work out the laws of the process. And while he was constantly desiring to have his ideas developed, he nevertheless found it difficult to express them, and therefore because of the

*Reprinted by permission from System for January, 1919. Two years ago this month the Pulp and Paper Magazine printed a paper by Mr. Wolf on Mill Efficiency, which was in such demand that we know our readers will follow with great interest this new contribution on the human factor in industry.

lack of encouragement he soon became set in his ways and antagonistic to innovations.

What I say about papermaking I know from observation in other industries applies equally well to them, and the more specialized the work the less interest the worker shows. In many of our industries the worker is no longer a mechanic or a craftsman, but performs merely a series of motions in which there can be no pride because in the minds of the men these motions are only remotely related to the finished product.

John P. Burke, who is president of the Pulp, Sulphite and Paper Mill Workers' Union, expressed this thought very clearly in a letter which I received from him recently. I quote in part from Mr. Burke's letter:

"When I worked in the factories, which I did from the age of 12 to 25, one of the things I found the most dissatisfaction with was the deadening sameness of the work. I never remember a time, when working in the factories, that I became so interested in my work that I didn't long for quitting time to come.

"After leaving factory work I got a job with a building contractor. Becoming proficient as a carpenter. I time and again did certain work of more or less creative nature; I often became so interested in it that I paid no attention to quitting time. I have worked for two or three hours after the time when I might have quit work. There is joy in creative work."

This feeling of being an automaton, with a lack of responsibility that goes with it, is to my mind the greatest cause of the workman's dissatisfaction. Unfortunately, the workman has in too many cases accepted the state of affairs as inevitable and inherent in the modern industrial movement, so that his idea is to shorten the hours and raise the pay in order to have as much time away from the work as possible to develop himself along the lines he really enjoys.

What is the Real Motive that Makes Men Work?

Every individual craves responsibility—this is the very foundation rock upon which individuality is built; but modern industry tends to take responsibility away from men, and they cease to care—for there is nothing to care about. Of course, they can be made to work faster by giving production bonuses, but the production bonuses operate very much like the outer pressure which comes from low wage conditions. They are outer stimuli, whereas what we need is the inner desire, which is the real motive power of all individual activity.

A man cannot work from within, however, unless the work interests him, and the work cannot interest unless he is using his mental as well as his physical powers. There is nothing creative about pure physical, muscular effort, as creative work begins only when the mental powers of selection and adaptation of means to ends come into play.

What, therefore, has happened to the creative spirit in the progress of industry from individual craftsmanship to infinitely divided, standardized, machine production?

The development of modern industry has taken away from man the opportunity to create a finished article. In other words, the man has become part of a larger individual which we may term an organization. An industrial organization that is performing a particular function in our industrial life is really creat-

ing as a whole what the individual man once created in its entirety. Therefore, if we are to enable this larger individual to do its creative work well, we must so design it that the greatest possible number of men are conscious of what the whole organization is doing. They must be conscious participants in the creative process of the organization, which must be so sensitively adjusted that it in turn will be conscious of the welfare of individual members, and of the degree, therefore, of their intelligent participation in the work.

We must give individuality to the organization, in order to give individuality to the men in the organization.

Of course, it is true that because of the creation of this larger industrial unit, with its accompanying specialization through the aid of mechanical devices, production has been enormously increased. But if through these same mechanical devices we destroy the individuality of the workman, the apparent advantage to society will soon be seen to be at a disadvantage. We cannot get greater enjoyment out of life by simply increasing our possessions, but only by increasing our capacity for self-expression. Greater expression means manifestation of greater life, and therefore a fuller realization of individual capacity which, after all, is what we are striving for.

It is useless for us to try to develop an esprit de corps in an organization by artificial means of a purely emotional nature. The only kind of an organization that will have a permanent esprit de corps is the kind where the creative power of the individual is freest to express his real inner spirit. Unless men intelligently participate in the productive process the organization cannot be efficient, for team work comes only when men work together not only with their muscles but also with their hearts and minds.

When we realize that every industrial organization is created by man, and that he cannot create something of which he does not contain at least the essence within himself, it seems to me we have a right to take the human body as an example of the highest type of organization. Why not, then, pattern our system of control after the nervous system of the human body, through which the life impulses or vitalizing forces are distributed to the bodily structure?

A Good Pattern for a System of Control.

The nervous system of the body is made up of three parts:

1.—The sympathetic nervous system, which controls all the subjective or involuntary functions of the body, such as the heating of the heart, contraction and expansion of the blood vessels, and thousands of kindred functions, which are in a certain sense automatic.

2.—The spinal cord, that part of the cerebrospinal nervous system controlling many of our reflex or semi-automatic functions, which we have by conscious effort learned to perfect, such as walking, riding a bicycle, playing a violin, and so forth. This system is the great connecting link and co-ordinating factor between the highest controlling nerve centre—the brain, and the more widely distributed functions of the individual groups of cells or organs immediately controlled by the sympathetic nervous system.

3.—The cerebral part of the nervous system (the brain), which is the seat of our memory, through which most of our past experiences can be consciously

recalled when needed to solve problems immediately confronting us. It is therefore the seat of our consciousness and volition.

These three parts of the nervous system of the body in the same order correspond (1) with the principle of individual specialized activity, which is reflected in the internal organization of the body cells into organs performing special functions; (3) the principle of unified activity, which co-ordinates both the general and specialized activities of the body — to form the one

(To be continued.)

resultant personality, that the philosopher calls the ego. It is this we mean when we say "I am."

All of this may sound rather erudite and irrelevant to the subject of interesting men in their work, but it seems to me that if we are to understand the laws underlying human activity we must first understand the laws underlying individuality, and that if we are to understand the laws underlying individuality, we must look for them in the highest type of individual that has been created, namely, man.

Brief on Behalf of Manufacturers Before the Paper Control Tribunal

The following is a continuation of the manufacturers' argument from page 9.

Machine Losses.—This item represents the wastage or loss of raw material comparing the weight of the raw material going into the paper machines with the weight of the finished product, and as explained by Mr. Sabbaton, it is subject to very considerable variations. It is not always possible to determine it definitely as the slush pulp is not weighed. In the case of the Glens Falls Mill, where accurate records have been kept for a period of two years, Mr. Weaver produced statements showing the range in variation of the quantity of raw material compared with the finished product, ranging from 107.3 to 124.4, or 124.4 lbs. of raw material to 100 lbs. finished product.

Leaving the question of manufacturing costs, the manufacturers have to take issue with the eighth finding of the Circuit Court Judges, which reads:

"Owing to more costly wood and higher expenses for labour, taxes and freight charges, the typical mill in the United States cannot, with equal skill and management, produce paper as cheaply as a similar mill in Canada; such disadvantage means an additional cost per ton of paper of slightly more than \$5."

It is difficult to say exactly where the foundation was found for such a statement since as regards two of the items, viz., labour and freight, the expense is the same. The freight increases came into effect in Canada a little later than in the United States, which may have misled the Judges, but as regards labour, in most of the mills the International Union scale prevails and it is the same on both sides of the line. The Judges were apparently led into error by the fact that after excluding Brompton and Spanish River wood costs, they were comparing the costs of five of the most favourably situated Canadian companies, i.e., Abitibi, Beloe, Donnacona, Laurentide and Price Bros., with the wood costs of the International Paper Company, a company which has to bring a very considerable proportion of its wood from outside sources, and for whose wood costs an additional allowance was made in the findings. Such a statement is therefore wholly unreliable and cannot be accepted.

Investment.—The question of investment has been very fully gone into in the American investigation in connection with a number of the companies covered by the present investigation and as the results are fully dealt with in the American manufacturers' brief, which is already before this Tribunal, we will not attempt to again cover the same ground. The allowances may be summarized as follows:

	Claimed by U.S. mfrs.	Allowed by Cir. Judges.	Allowed by Mr. Pringle.
Tangibles	\$27,500	\$25,000	\$25,000
Going Value . . .	14675	2,500	nil
Working Capital	12,000	12,000	10,000
Total	\$44,175	\$39,500	\$35,000

Attention is drawn to the evidence of Mr. Thomas at the last hearing, Sept. 23rd, speaking of the Booth plant:

"Our plant figures out at approximately \$48,000 a ton, including working capital, but of course excluding wood lands and water powers."

"Mr. McNicoll—"The figure of \$30,000 is the figure we used to use in McGill University. It would not include the working capital. It was simply the value of the plant."

As regards going concern value for which Mr. Pringle has not made any allowance, the manufacturers contend that this has been proved beyond question in the United States, where the subject was fully gone into. This evidence corroborated by the evidence given here, where it was shown by a number of witnesses that all the Canadian mills were obliged to pass through a period of high costs and low returns before they got on their feet. That an allowance for going value is a proper subject for consideration can be taken as settled law in all rate making cases.

It is a value attaching to the company's property as a result of its having established revenue producing business. If it is not allowed the investor is required to suffer the loss if the enterprise fails, and is deprived of the chances of additional gain if the enterprise succeeds and no recompense would be allowed for the skill shown in developing and conducting the business or even for the value of experience which is proverbially expensive.

Going value has been defined as representing "the reasonable costs or financial sacrifice incurred by the investor in building up a business which will yield a fair return upon the fair value of the tangible physical property."

A number of cases are cited in the Brief.

As regards the third element of investment, viz., working capital, while an allowance of \$10,000 per daily ton would have formerly been considered sufficient, with the increase in the cost of inventories, an idea of which can be gained by reference to the statements produced by Mr. McNicoll, the evidence is very clear that a working capital of \$12,000 is no more than sufficient under existing conditions. In the ease

of Mr. Booth. Mr. Thomas testified that the working capital used is considerably in excess of this sum. . . .

It is true that Mr. Clarkson suggested a figure of \$30,000 for investment divided into \$18,000 for tangibles and \$12,000 for working capital. Two facts have to be borne in mind in connection with his estimate:

In the first place he has reduced the mills to what he considered a perfectly balanced basis, allowing only a leeway of 10 per cent., that is to say, where a mill has an excess of either groundwood or sulphite as compared with their rated capacity for the production of newsprint, he has only taken the pro rata proportion of their investment in the groundwood and sulphite plant. (The Brief shows this to be a false premise.)

In the second place, Mr. Clarkson has taken the original cost of the mills as ascertained from their books, whether the mills were constructed 20 years ago or recently. We submit this would be unfair and as Mr. Clarkson admits, such a basis would place the older mills at a great disadvantage. "The capital invested has to be double what it was before or it would place them at a disadvantage. I realized that situation and I assumed that it would be thrashed out. What I was aiming at was to find the actual investment in each mill."

Return upon Investment.—In dealing with the subject of return upon investment, we have very little real contradiction in the evidence in either the Canadian or American investigation. In the first place practically all the witnesses have agreed on the soundness of Mr. Schwab's dictum—\$1.00 to the plant and \$1.00 to the shareholders. From the standpoint of the investor the net profit has to be at least double the amount which he is entitled to expect as a fair return upon his investment taking into account the hazards.

This view was concurred in even by the Publishers' witnesses. While some of them put the rate of return at a lower figure, they all endorsed the principle of one-half to the plant and one-half to the shareholders.

All witnesses in the investigation with the exception of Mr. Koepple admit that the rate of return should be proportionate in the degree of hazard. Of course this is only common sense.

Mr. Clarkson was examined by the Commissioner (Mr. Pringle), on the question of return.

Mr. Clarkson—"Generally you need 20 per cent. to get on your investment, and you cannot pay out on any industry if it is to succeed more than 50 per cent. of your earnings."

"I want to qualify that slightly. For an industrial undertaking to operate in an ideal condition it ought to have 20 per cent on the stockholders' money representing capital in the business and which would allow a dividend of 10 per cent. to the shareholders. But on the other hand, if it is the custom and the undertakings are able to borrow a considerable portion of their money on bonds or at a reduced rate of interest, then the same conditions could be met with the earnings slightly less than 20 per cent.—so that you might take from 16 per cent. to 20 per cent.—you cannot fix it definitely."

The evidence therefore fully justifies the profit of \$19.75 per ton adopted by the Circuit Court Judges

based upon a return of 15 per cent. on an investment of \$39,500 per daily ton.

Additional Costs.—It will be remembered that following the appeals taken to the Circuit Court Judges in the United States an application was made to the Federal Trade Commission for an increase in price to cover certain elements of additional cost which had occurred since the date on which the original price had been fixed by the Federal Trade Commission. The application was argued during the summer, but judgment was reserved until after the Circuit Court finding had been announced, and their supplementary finding giving effect to these increases and fixing a price of \$75.05 per ton was only handed down on the 18th October.

The evidence before the Federal Trade Commission had shown the following increases:—

	per ton.
Wood cost increase since April 1st, 1918 . . .	\$3.75
Wage increase since May 1st, 1918	2.65
Freight increase since July 1st, 1918	2.41
	<hr/>
	\$8.81

Using, for the sake of argument, the \$8 figure adopted by Commissioner Pringle (investigation shows that increases in wood, wages and freight for typical Canadian mills range from \$6.17 to \$10.07 per ton), and the profit of \$19.75 per ton adopted by the Circuit Judges and applying them to the costs ascertained by Mr. Clarkson for the respective mills, and adopting also for the sake of argument the principle of averaging followed by Mr. Pringle, although the manufacturers criticise it as being unfair to them, we get the following results:

1918.	J. B. Booth	Brompton.	Donnacona.	Fort Frances.
Jan.	55.38	.....	47.36	64.08
Feb.	61.99	.....	48.90	62.90
March	56.17	.....	48.86	61.84
April	56.15	63.59	44.15	62.89
May	52.86	60.89	43.04	62.27
June	51.66	56.53	42.03	.....
July . . . . .	.....	52.34	45.00	.....
	<hr/>	<hr/>	<hr/>	<hr/>
Average . . .	55.70	58.34	45.62	62.80
Increase . . .	8.00	8.00	8.00	8.00
Profit	19.75	19.75	19.75	19.75

	83.45	86.09	73.37	90.55
		Price Bros.		Price Bros.
1918. Laurentide (Kenogami mill) (Jonquiere mill).				
Jan.	44.24	47.22		67.16
Feb.	50.59	48.95		68.20
March	45.74	45.96		53.49
April	43.04	45.20		46.07
May	41.08	.....		.....
June	43.52	.....		.....
	<hr/>	<hr/>		<hr/>
Aver.	44.70	46.83		58.73
Inc.	8.00	8.00		8.00
Profit	19.75	19.75		19.75
	<hr/>	<hr/>		<hr/>
	72.45	74.58		86.48

Following the principle that a price should be fixed which would give a reasonable profit to the highest cost mill efficiently managed, the case of the Booth mill can be used as an example since it would typi-

fy not only that mill but also the Eddy Company, who supply their entire output to the Canadian market. It will be readily seen that to get even a reduced profit a price should be fixed of not less than \$80.00 per ton, and that the prices for the other classes of paper should be fixed at corresponding rates. While the price in the United States stands at \$75.05 only, it is to be borne in mind that the Circuit Judges omitted all provision for stumpage \$2.00 per cord, or \$3.00 per ton, and that the Federal Trade Commission eliminated the increased wood costs which would be equivalent to \$3.75 per ton of paper. With these additions the price of \$80 per ton would be justified.

Retroactive Feature.—The manufacturers contend that in any event the price should have been made retroactive at least to the 1st of May, 1918, if not the 1st of January, 1918, instead of to the 1st of July, 1918. In the first place all the orders from the 1st of July, 1917, had contained a provision that they were subject to readjustments from that date. From the 1st of July, 1917, to the 1st of May, 1918, the publishers enjoyed the benefit of a price which for the ten months from July 1st, 1917, to May 1st, 1918, was equivalent to \$52.10 as stated by the Commissioner, and this notwithstanding the fact that according to Mr. Clarkson's first statement the manufacturing costs in many cases exceeded this sum. The order fixing prices from the 1st of May, 1918, contained an express provision to the effect that "if the price fixed by this order is too high or too low, there will be a revision of price from May 1st, 1918."

In the second place, the labour increase took effect in Canada from May 1st, 1918, and the prices should have been increased from that date to take care of this additional cost.

Thirdly, the prices were increased in the United States as follows:

From April 1st. to May 1st, \$70.00; from May 1st to July 1st, \$72.65; from July 1st, \$75.05.

As the manufacturers are required to adjust between themselves the difference between the price at which the Canadian tonnage had to be sold under the several orders, and the price received by the mills in the United States, it would be grossly unfair to put upon them this increased differential without compensation from the publishers.

Furthermore, it should be borne in mind that the prices fixed in the United States only applied to ten companies, of whom eight, including the Fort Frances Company, were Canadian. The other thirty odd mills in the States were not limited as to price, and the ruling price in the States as appears by the record was very much higher. The Court will see by reference to the differential order made in connection with the Fort Frances Company that the differential there has been assessed with reference to an open market price of \$65 in the States, although at the time the fixed price was only \$60. A calculation has been made showing that from March 1st, 1917, to July 1st, 1918, the Canadian publishers paid the mills no less a sum than \$874,258.80 less than the manufacturers could have sold the same product for at the price fixed by the American Government, and \$1,423,212 less than could have been obtained for the paper at the average open market price. An examination of the costs during the winter months of 1917-18 as reported by Mr. Clarkson will show that the price should have been made re-

troactive to a period which would have covered these months, and the manufacturers respectfully submit as the case is now being put forward for adjudication upon its merits that the interim price should be made retroactive at least to January 1st, 1918.

PULP AND PAPER PROSPECTS AT PORT ARTHUR.

Mr. A. G. Pounsford, manager of the Port Arthur Pulp & Paper Co., contributed an interesting article on the local industry to the Port Arthur "News." We quote:

In the year 1917 the leading exports of Canada were as follows:

Grain and grain products	\$480,175,160
Explosives	434,870,810
Meat (beef, bacon, etc.)	77,040,771
Pulp & Paper Products	62,126,857

From this you will note that the pulp and paper industry, exclusive of war material, leads in manufacturing exports. Hence, now that peace has come, pulp and paper will forge to the front again, since explosives have been practically eliminated. It is interesting to note in this connection that Canada is the second largest pulp and paper producing country in the world, the United States holding first place. The United States at the present time is probably near the peak of its production, and certainly would be so if pulpwood was not obtainable from Canada.

The reason for the great growth in the pulp and paper industry can be attributed to two facts. First the estimated possible yield of pulpwood in Canada is 1,033,370,000 cords, and second, the water power is incalculable.

Port Arthur has in this district a large quantity of pulpwood, likewise power, and with the transportation facilities here there is good reason to believe that Port Arthur will soon become a leading pulp and paper centre.

Some facts with reference to the small mill which is located here might be of interest. The pulpwood brought in by rail last winter took 2,700 cars. If the sticks were laid end to end they would start at Vancouver and go through Halifax and then 700 miles out into the Atlantic. This is approximately a year's run of wood. This company, however, purchased wood last winter amounting to 80,000 cords, and in value approximately a million dollars when unloaded in the yard. To make fifty tons a day it also requires approximately 12,000 tons of coal per year, 2,400 tons of sulphur, and 4,000 tons of limestone. Figuring in car loads we have 2,700 cars wood, 400 cars coal, 60 cars sulphur, 100 cars limestone, a total of 3,260 cars.

This will turn out 1,000 cars of manufactured pulp. It therefore can readily be realized the quantity of material handled at the mill.

This industry gives year round employment to about 150 men, operating the mill 24 hours per day. The number of men it gives employment in the bush cannot be even estimated.

FLOWERS FOR MR. WILSON.

A report of Ellwood Wilson's remarks at the meeting of the Woodland's Section of the Canadian Pulp and Paper Association, was printed in our issue of October 17. In ordering a number of extra copies, a subscriber said: "It is the best summary of present forest conditions in Canada I ever saw."

The Manufacture of Groundwood Pulp

By G. W. DICKSON, Hawkesbury, Ont., Riordon Pulp and Paper Co.

(Continued from Page 6.)

GRINDSTONES.—The vital part of the grinder is the grindstone. Up to the present time natural sandstone has been almost universally used, the English stone from the Newcastle district being, perhaps, best suited to this class of work, and known in every mill in the country. Sandstone is of frequent occurrence in nature, but comparatively few deposits are found suitable for pulpstones. Present difficulties in shipping from Europe have resulted in a search of our own country for pulpstones (Bulletin 19, Dept. of Mines, Canada). Good grades of sandstone for pulp making are found in America in parts of Virginia, Ohio, and New Brunswick. Some of the requisites of a good pulpstone are—

(1) The quartz particles (which are the active grinding component) should not be too large, nor vary in size beyond certain limits. For instance, most of the particles should pass through a 30-mesh screen, and a certain percentage be retained on each of a 40, 50, 60, 70 and 80 mesh screen. There should also be a portion pass through a 100 mesh or finer—this probably being the matrix or cement binding the particles together. Following is the analysis of a good English sandstone,—

(All passes through a 20-mesh screen.)

Retained on		
30 mesh	.....	21.1%
40 "	.....	15.4
50 "	.....	13.7
60 "	.....	10.8
70 "	.....	15.3
80 "	.....	6.9
90 "	.....	2.2
100 "	and finer.....	12.7

98.1%

This shows 1.9% loss as fine dust in screening. It would therefore be justifiable to add this to the fine material, making the "100 mesh and finer" content equal 14.6 per cent. From the fact that the quartz particles are graded in size it may be concluded that the chances of voids in the stone are reduced to a minimum. Should the proportion of fine material be reduced the stone would have a tendency to crumble, i.e., it would require frequent sharpening and would wear out quickly. On the other hand, were the fine material in excess, the cutting particles would be so embedded as to be less active and the surface would tend to glaze and make a very fine dull stock.

(2) The quartz particles should have a certain degree of angularity. Particles of beach-sand, worn by wave action will be found somewhat spherical, but in a good sandstone these particles are more or less irregular in form, imparting that quality of "grit" which is difficult of limiting to definite specifications.

(3) Most foreign matter is injurious, some only inactive. Flakes of mica weaken the stone, as they have little adhesion. Sand pockets may be scraped out clean, undercut and filled with sand and cement grout. Iron and similar stains are not generally injurious when they occur in spots, but when in seams or planes they indi-

cate a weakness of the stone along that plane, the stone is not homogeneous and is liable to split.

(4) Stones containing large nodules of flinty material should be avoided, they produce excessive coarse stock and shives.

In examining a newly turned out stone it should be remembered that the surface is covered with fine dust from machining, and in order to locate defects it is necessary to wash or brush this off.

When a sandstone is taken from the quarry it is soft and contains water, holding various minerals in solution. In this state it is readily worked up to its finished dimensions, but it should never be used for grinding until properly seasoned. This may be simply a drying process, or more probably a chemical action,—a precipitation of the silica compounds and other constituents of the quarry water in presence of air or the carbon dioxide in the air. Investigation of such points as the following would be of great value to the pulp maker,—

1. Is seasoning a drying action or a chemical change?
2. At what temperature is seasoning most rapidly accomplished?
3. Would seasoning be accelerated in an atmosphere of CO₂?
4. Proper length of time for season, or rate of penetration?

In operation a pulpstone is subjected to the action of several forces—

(a) Centrifugal force, which frequently causes fracture due to sudden accelerations.

(b) Compression between the flanges, which increases as the pressure of the wood retards rotation.

(c) Local expansions and contractions, as when the surface is heated too quickly in starting up, frequently causing sealing.

Artificial stones have been tried out and are satisfactory under certain conditions, but the fact remains that the great majority of pulpstones now in use are natural sandstone.

Treatment of the Pulp.

From the grinder pits the stock flows by gravity to the bull screen. This consists of steel plates, perforated $\frac{1}{4}$ in. to $\frac{3}{4}$ in. dia. as best suit local conditions. Scrapers are necessary to remove the slabs, knots, bark and large splinters collected on the plates, and in some cases the entire plate is so mounted as to have an oscillating motion. Showers are placed to wash the scrapers and plates and this water also washes the good stock off the screenings and returns it to the stock. For satisfactory operation of the bull screen sufficient water must be added to reduce the consistency of the stock to at least 1 per cent, or 84 lbs. per 1,000 gals.

The stock now passes to the regular screens, either by gravity or by means of pumps. Diluted in the bull screen to about 1 per cent consistency it can be satisfactorily handled by an open fan type centrifugal, or a plunger pump. For heads of less than 100 ft the centrifugal pump is generally preferable. Multi-stage centrifugal pumps, with small passages for the stock are not satisfactory.

Before the stock enters the centrifugal or diaphragm

screen, it is necessary to dilute it to about .25 per cent, or 20 to 25 lbs. per 1,000 gals. This mixing with re-water should be very thorough, and the stock flow over a riffler or at least through a chest, where its velocity is reduced, in order that sand and knots may settle out. This will give cleaner stock and save the screens much unnecessary wear. The centrifugal screen has many advantages over the older type; it is simple, clean and compact, and has greater capacity. On the other hand, the disadvantages are:

(1) Coarse stubby stock may be forced through the perforated plate, since the perforations are about 1/16" (.0625") dia., or somewhat smaller, whereas the slot in a diaphragm screen-plate for similar stock is not generally over .01" (or a 10-cut plate). The long narrow slot also offers a freer passage to the long, fine fibres. There is also the added tendency of the runner of the centrifugal screen to cut off the fibres as they are passing through the plate, making them short and weak.

(2) Difficulty in immediate detection of broken plates.

Leaving the screens, it is necessary to thicken the stock for the paper machines, for storage or for shipping. Thickeners (also called Deckers or Feltless Wet Machines) are generally used to bring the stock to a semi-liquid state suitable for beating. Fig. 5A shows a typical section of these machines. These thickeners are simple, consisting of a cylinder covered with a fine wire mesh and revolving in a vat of the thin stock. The water passes through the cylinder covering, and is used as re-water for diluting the stock in the screens, while the stock is "conched" (picked off by a solid roll, from which the layer of pulp is scraped) or in some cases blown off the cylinder by air pressure (pneumatic thickener). As groundwood is not as free a stock as sulphite the cylinder will not pick up as much as it would of the latter. Makers have largely adopted 36" as the most suitable diameter for a cylinder for this work. A cylinder of this diameter, to be stiff, cannot well exceed 100" width (or "face") without excessive weight, in fact 90" is a width found generally more economical.

When pulp is to be handled in a solid state it is taken off on a Wet Press. These machines have cylinders, similar to the thickener, with the addition of felts and press rolls, the film of stock being successively transferred from the cylinder to the felt and wound on the press roll, from which it is sliced when sufficiently thick. This "lap" as it is called is folded for piling. Its moisture content is from 50 to 70 per cent. On the Wet Machine the wool felt used is the heaviest item of expense, and too much care cannot be given to procuring suitable weave, proper dimensions and avoiding excessive tension and whipping on the machine.

If the pulp is to be shipped any distance, or stored for any length of time, a further extraction of its water content is advisable. This is accomplished on an hydraulic press, which reduces the moisture to about 40 per cent. As grinding does not appear to sterilize the fibres, as in the case of sulphite, where they are exposed to boiling in acid for several hours, care must be taken in storing groundwood. Dryness and ventilation are necessary to both fresh and pressed laps, or moulding or mill-dewing will take place. This first discolors the pulp, then the fibre strength is reduced, and the final state is a dry powder. This action would appear to be a continuation of the fungus growth that attacks the tree from which the pulp was ground.

Having followed the process this far it will be noted that losses occurred as follows:—

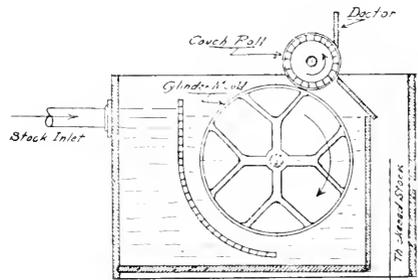
(1) Coarse stock from Bull Screen.

(2) Tailings from Centrifugal or Diaphragm Screens.

(3) Fine or flour-stock in suspension in Re-water.

Coarse stock may be returned to grinder pockets specially designed for that material, to refiners of the mill-stone type, to pebble mills, or to kollergangs. Beaters, having basalt stone rolls and beds, are well suited to handling regular screen tailings.

Re-water losses are not so evident. The overflow may have been carried off by an obscure drain for years. If a small weir be constructed for measuring this flow in a conspicuous place, it will serve as a good object lesson. A daily test of the re-water will probably show anywhere from 3 lbs. to 6 lbs. stock per 1,000 gallons. Gauge the weir, and a short calculation will show how quickly a ton of stock will disappear over it. And this fine stock that is being lost is probably just the filler required to give the paper a good surface. The daily re-water test will give the foreman a line on his cylinder conditions. The daily test may be supplemented by taking off a bottle of the overflow every 1 or 2 hours, and leaving it to settle. This will give a comparative idea of the loss at a glance. The overflow should pass through a save-all



Ground Wood Slush Machine or Decker
Fig. 5A.

of the Fuller or pneumatic type, if the latter, collect the sulphite waste water with the ground wood, for the sulphite fibres assist in the retention of the flour-stock. Floor water from Wet Machines and hydraulic presses should also pass through the Save-alls.

Unit Production "Yield."

Turning from the oppressive consideration of losses, "yield" presents a more cheerful subject. As the ground wood process is entirely mechanical, no constituent part of the wood is removed, so the conversion losses may be expected to be small. As a rule 1 cord of prepared wood will produce 1 ton to 1 1/8 tons of pulp. In the sulphite process 2 cords are required for 1 ton of pulp. However, as wood is measured by volume and pulp by weight, variations will be found in the above mentioned yield. The yield will be proportional to the specific dry weight of the wood used. This specific weight or density of different woods presents a wide range of variations. For instance, a cu. ft. of dry bamboo weighs only 20 lbs., whereas a cu. ft. of dry ebony weighs over 70 lbs. However, these are extreme cases, and one not bearing directly on woods suitable for pulp. The woods more directly concerned in this case are:—

	lbs. per cu. ft. dry.
Balsam	22.22
Hemlock	25.53
Pine (white)	21.72
Spruce (white)	25.47
Spruce (black)	28.40
Jack Pine	25.40

From this, the yield to be expected, may be calculated as follows—taking for example a cord of mixed white and black spruce, at a specific weight of 26.93 lbs. per cu. ft. An average cord will contain 90 cu. ft. of solid wood, rossed. The weight of the cord will be 2,424 lbs. If this actual weight of solid wood produce 1 1-8 tons (2,250 lbs.), the conversion loss is approximately 7 1-8 per cent.

Variable Factors.

A familiar pulp mill expression is "the pulp is made on the grinder," and it is true in more senses than one. If the grinding conditions are not correct, subsequent treatments of the pulp have very little effect in rectifying its short-comings. If it does not form a good sheet on the cylinder or Fourdrinier, it is necessary to go back to the grinders for the cause. Here, there are several factors which determine the character of the stock.

1.—The surface of the stone may be sharp or dull. At extreme sharpness or dullness the stock is very fine and lacks fibre. Ordinarily, sharp stock is short and coarse in fibre, and will not calender well on the paper machine. It is also free—the water leaves it readily. After the first sharpness of the stone wears off the fibres become finer and longer and are "slow" on the paper machines—retain the water to a greater extent. This is usually a most desirable stock, until the dulling process is carried to the extent of giving an excess of flour stock. Of course, a stone may be of an extremely fine or coarse or non-uniform structure, and no amount of dressing will make it produce a really good stock.

2.—The temperature of grinding also affects the stock. If the dams in front of the grinder pits be carried high, so that the stones are deeply immersed in the stock, and the water supply to the pits reduced, the temperature of the stock will rise to the neighborhood of 190° F., or over—the resulting stock being soft. This gives a low finish to the paper. If the immersion of the stone be slight and sufficient water added in the pit, the temperature of the stock may be reduced to about 140° F. and a "hard" stock result. This will give a higher finish to the paper. Some plants are equipped with temperature indicators or automatic recorders for helping to control this factor.

3.—Pressure and speed variations, within certain limits will vary the production, but not have much effect on quality. For safety a surface speed of 3,500 ft. p. m. is considered the limit.

These variable conditions have been carefully studied and results of experimental runs made at Wausaw (Wis.), Laboratory are ably described by J. H. Thickens, in his report, "Experiments with Jack Pine and Hemlock for Mechanical Pulp." (Issued by Henry S. Graves, Forester, U. S. Dept. of Agriculture, June 11, 1912), and published in the Pulp and Paper Magazine.

Determination of Quality.

Having shown the extreme variations that can be produced at the grinder, the next consideration is to

maintain conditions favorable to production of the quality of pulp required on the paper machines. This is accomplished in several ways, close observation being necessary in every case.

The condition of the stone may be judged by the color and behavior of the stock coming from the grinder pit.

A sample of the lap from the wet machine should exhibit a certain degree of strength and have a greasy feeling. If too free and sharp, the films of stock will separate readily.

The blue glass will be found useful throughout the process. It consists of a light frame about 1 inch deep, checked along its lower edge to receive a piece of blue glass about 4 to 6 inches square. The sample is diluted and its behavior on the glass noted by gently shaking from side to side, or by a circular motion similar to the gold miner's method of panning a sample. The blue glass may be held over an electric light, or the light may be above it. The location of the light, the quantity and dilution of the sample are factors which the individual observer may decide from his own experience as giving the best results. The character of the pulp is readily seen. It may be used to determine condition of stone, quantity of coarse stock, and quantity of stock in re-water. It is useful in detecting broken screen plates in centrifugal screens. By this method comparisons only can be made and the observer must be familiar with the behavior of the sample to draw the proper conclusions.

Stereopticon slides can be quickly made of stock samples retained between two glass plates. While this method projects a magnified image of the fibres on a screen and gives a clear idea of their character, it is, on the other hand, not representative, since the sample taken is necessarily very small.

Sedimentation test¹ has been tried out, but has not been endorsed by pulp makers generally. It appears that results are affected by temperature variations, consequently all such conditions must be taken into account. Sedimentation, or the time required for the water to leave the stock depends on the freeness or slowness of the stock. This indicates that the test would be particularly applicable to testing condition of individual grindstones. This test, like the preceding ones, should not be used exclusively. It is better to use several methods before judging a certain stock, since each test is valuable only for detecting certain characteristics.

Uses of Groundwood.

Mechanical or Groundwood pulp forms the greater portion of newsprint, cardboard and building boards. It is also largely used in book papers, tissues, etc., and may be bleached when required. The most satisfactory wood in general use for this pulp is spruce; balsam, up to 40% with spruce making a very good pulp. Small percentages of hemlock and jack pine do not materially affect the quality. Experiments have been made in grinding deciduous woods, but the fibres are found short and not as satisfactory as the conifers. In the future, the scarcity of coniferous woods will doubtless, necessitate experiments which will evolve better methods of grinding hardwoods. (Recent experiments of the Laurentide Co. show the successful use of birch up to 10 per cent.—Ed.)

¹See "Sedimentation test of ground wood pulp," this Magazine, Vol. 15, p. 469, 1917.

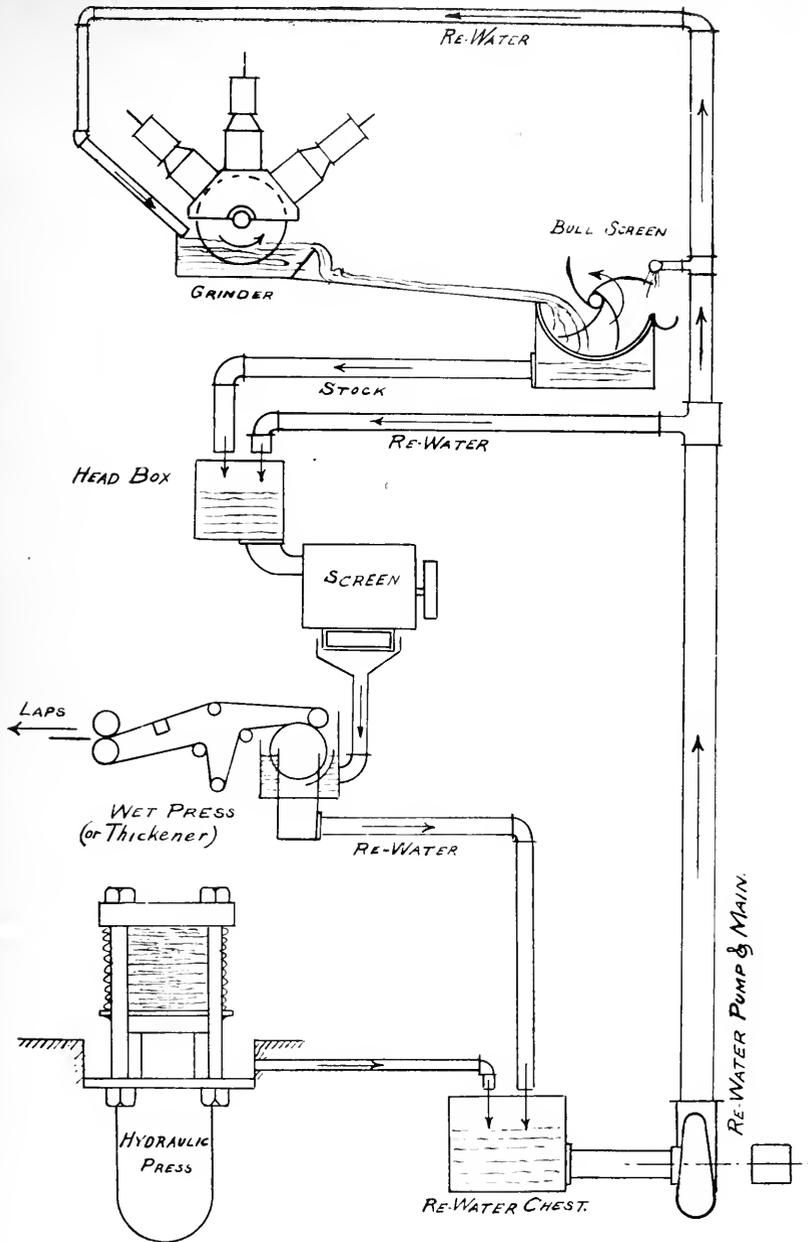


FIG. 6.
GROUND WOOD PROCESS DIAGRAM.

Special, or Modified Groundwood Processes.

(1) ENGE PROCESS:—Blocks are immersed in water in closed boiler, the temperature is brought up to 266 degrees Fahr. and pressure to 176 lbs. per sq. in. applied and maintained for three hours. This gives a whiter fibre. Grinding is carried out length-wise of grain of wood, the axis of stick being inclined 10 degrees to the face of the stone. Fibre length, by this means, is greatly increased.

(2) FRIEDSAM PROCESS:—For loaded papers. Loading material, such as tale, held in suspension in the water is introduced at the grinder, the loading penetrates better, the grinding process is accelerated, power for grinding is reduced and the final color improved.

(3) LEFEBVRE PROCESS:—This process does not apply to the grinding of the wood, but to the handling of the pulp.

The pulp from the grinders is diluted with white water, as from the wet machines, and passed over riffles to a tank with a large area, so that the stock virtually comes to rest. Dirt settles out and the finer fibres, which remain near the top, are pumped into a chimney, which discharges them to the screens. A further separation of dirt, bark, etc., takes place in the chimney. Screenings are passed through a Jordan engine and returned to the riffler. This process aims to prevent waste of fibres by the elimination of white water discharge. Maximum yield is obtained as the only loss of fibre is the small amount removed with the dirt in the periodical cleaning of riffles, tank and chimney.

(4) HALL PROCESS:—The surface of the stone is cut with grooves parallel to the shaft and about 1/2" to 3/4" apart. The object is to collect the fibres that have been ground from the block and protect them from further disintegration. The result is a greater average length of fibre and less debris than in ordinary grinding.

Power Requirements.

Having shown that the losses in the groundwood process are comparatively small, we have opposed to this a heavy item of expense in the process, viz., power required for grinding. This generally runs about 60 H.P. per ton. Some mills have made good pulp with less than 55 H.P. per ton, but they are the exception. My reason for specifying "good" pulp is that a stone may be sharpened up to a point where it will grind a ton of sharp, coarse pulp at a very low power consumption. However, such a pulp would doubtless cause trouble on the paper machine. A certain degree of "dullness" is necessary for the pulp to form properly on the Fourdrinier.

The power required per ton for the entire process might be summed up on the average as follows:

Grinding	60.00 H.P. per ton
Bull screen	.20
Screening	1.85
Wet Machine	1.67
Hydraulic press	1.25

Total 64.97 H.P. per ton per 24 hrs.

Thus, without considering the pumping of liquid stock, the power item for grinding is very large compared with the other parts of the process, 92% in the above case.

As stated above, this does not provide for pumping.

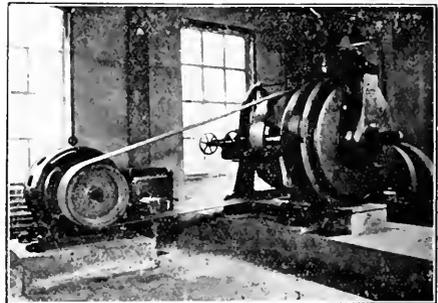
*See Pulp and Paper Magazine, Vol. 16, p. 801 (1918).

A mill may be located on a hillside or on flat ground, so it would be difficult to average this item. The accompanying diagram Fig. 6 may be taken as an ideal condition, as regard ng pumping, that is, the process being carried out by gravity. The only pumping being necessary is that required to lift the re-water back to points where it is required for thinning. As screening demands more dilution than other parts of the process we must provide maximum dilution at that point. Quantities of re-water required during the various stages might be summed up roughly as follows:

	Gals.
Grinding 1 1/2 to 1.5% stock or water per ton . . .	18,911
Bull screen .75% to 1% stock or add water per ton	4,787
Screening .3% stock or add water, per ton	55,855
	79,553

This shows total dilution at screens to be 79,553 gals. per ton, or 3% stock or 25 lbs. dry stock per 1,000 gal. liquid; whichever way we prefer to express it. This quantity of water must be pumped as a vehicle for circulating the stock through the different phases of the process.

The above quantity, in U. S. gals. equals 664,665 lbs. Now let us assume the vertical distance this liquid



Voith Refiner for Groundwood Screenings.

is pumped, referring again to our diagram, to be 20 ft. Without considering pump efficiency, this would require 1.68 H.P. If pump slip and friction are assumed at 50% we would actually require 3.36 H.P. to be added to above requirement.

Magnitude of the Industry.

There are in Canada at present 39 mills making Groundwood pulp. Their combined production is approximately 900,000 tons per year.

The quantity of Groundwood exported, for the twelve months ending March, 1917, is as follows: 332,595.7 short tons, valued at \$6,371,133, or an average price of \$19.16 per short ton. A much larger quantity was exported in the form of newsprint paper and boards.

Some interesting figures on the saving in freight effected by pressing the water from pulp are given in the Pulp Press.

One ton of pulp, 40% dry has a shipping weight of 5,000 lbs. If this is pressed to 60% dry the weight is 3,330 lbs., and 1,667 lbs. of water are removed. The freight charge saved, assuming a rate of 20 cents per 100 lbs. is \$3.33, gross. Making a liberal allowance of \$1.00 per ton for upkeep, repairs, accessories and operation of apparatus, the net saving on freight is \$2.33 per ton of shipping weight.



UNITED STATES NOTES

The Gould Paper Company, Lyons Falls, N. Y., and the Donnacona Paper Company of Donnacona, Canada, have entered into a contract with William Randolph Hearst, whereby the two companies, both of them controlled by G. H. P. Gould, will supply print paper to the "New York American." The "New York Times" has not renewed its contract with these companies for its 1919 supply, but has contracted for 40,000 tons of newsprint paper with Price Brothers & Co., of Kenogami, Que., through Frank Steele, general manager of the Canadian Export Company.

After a lapse of four months since its suspension, due to the limiting of the newsprint paper supply, the Sunday Magazine section of the "New York Times" made its reappearance last Sunday with a full quota of special features. The "New York Herald" announces a new rotogravure section as one of its added Sunday supplements, and others of the big metropolitan dailies are again giving space more liberally to special features. With the removal of most of the restrictions that had been placed on the use of newsprint paper by the War Industries Board, leading publishers are planning papers that will approximate in size some of the issues of ante-bellum days.

At the mills in Chicago and vicinity following the let-up of the holiday season production continues somewhat slowed up. The closing down of some of the mills and slowing down at others have afforded an opportunity to get some much needed overhauling done. New machinery is being installed wherever necessary. The long, steady run during the war has caused a wear and tear on machine equipment that makes necessary a replacing of worn parts even where entirely new machinery may not be needed.

A report by F. C. Clark, chief of the paper laboratory of the Bureau of Standards, announces successful experimental results on the problem of smoke pad filters, and gives practical assurance that a paper of the desired protection can be produced. Experiments and preliminary trials have been started on the manufacture of cigarette paper with a view to using ramie fibre.

The Kennebec Pulp Company, organized for the purpose of purchasing, constructing, operating, selling or otherwise disposing of pulp and paper mills, and to do a general lumbering and milling business, etc., was incorporated at Augusta, Me., December 12. The capital stock is \$10,000. E. M. Leavitt, of Augusta, is president and treasurer. The directors are Ernest L. McLean, S. L. Fogg, Clyde R. Chapman, and E. M. Leavitt, all of Augusta.

In the resignation of Felix Pagenstecher as secretary and executive committee member, the Kalamazoo Paper Company loses a highly capable official. Mr. Pagenstecher is to become associated in an official capacity with the Bryant Paper Company. Mr. Pagenstecher has been in the paper business in Kalamazoo since the organization of the Riverview Coated Paper Company in 1902. As general secretary and manager of this concern he had much to do with the remarkable career of prosperity it enjoyed. In 1917 consoli-

dation with the Kalamazoo Paper Company was effected, and the Riverview Company passed out of existence, Mr. Pagenstecher becoming secretary of the merged firm. No announcement has been made as to what Mr. Pagenstecher's duties are to be with the Bryant Paper Company.

The American Writing Paper Company, in line with its improvement policy, has made an innovation in the creation recently of two new offices at its Holyoke mills. W. S. Brooks, formerly assistant general superintendent of the Loft Dried Mills, has been appointed chief paper maker, and H. R. Harrigan, production engineer. The men selected to assume these newly created offices are both considered technical experts and in the performance of their new duties they are expected to aid materially in bringing about a maximum efficiency at the company's mills throughout the country.

Norman Wainwright has left a responsible position with the J. W. Butler Paper Company of Chicago to become associated with the Canadian Export Company at Montreal.

The Scandinavian Trading Company has removed its offices from the Produce Exchange Building in New York City, and is now occupying a suite in the Heeksher Building, 50 East 42nd Street.

Papers have recently been filed at Brattleboro, Vt., for the incorporation of the Grove Paper Company, Inc., which proposes to do business at Brattleboro, engaging in the manufacture of paper, timber, wood pulp and wood products. J. N. Harvey, R. C. Bacon, and H. C. Fenton are the incorporators. The new company is capitalized at \$2,500,000, of which \$2,000,000 is common and \$500,000 non-cumulative 7 per cent. preferred stock.

The J. L. N. Smythe Company of Philadelphia, has overhauled its new establishment at Nos. 30 to 34 South Sixth Street, and is adding much new equipment in anticipation of increased business. The head of the firm, Mr. J. L. N. Smythe, sailed recently for Australia. He is on a business tour of the Antipodes that is expected will take him several months to complete. His itinerary is laid out with a view to still further extending and developing the firm's considerable Australian business.

With the organization several weeks ago of the Kalamazoo Trading Company, the Michigan valley city now includes within the limits of its environs the largest consumers of waste paper in the world. The Kalamazoo Trading Company, incorporated with a capital stock of \$30,000, is about ready to begin operations at a location on East Main Street. The building occupied there affords several acres of floor space, and is most suitable for an enterprise which calls for the handling of huge amounts of stock. A. F. Meisterheim, formerly connected with the King Paper Company and the Bryant Paper Company, becomes the new concern's vice-president and general manager. New York capital is said to be largely interested in the venture.

Technical Section Of the Canadian Pulp and Paper Association

MANSFIELD GOING TO GAIR'S.

E. K. Mansfield, Chemical engineer in the Pulp and Paper Division of the Forest Products Laboratories has accepted an excellent position with the Robert Gair Co., of Brooklyn, N.Y., who distribute some 40,000 tons of paper products annually. Mr. Mansfield has been with the Forest Product Laboratories since his graduation from the University of Maine in 1916, where he took special courses in pulp and paper technology.

It is expected that an additional force will be engaged at the Laboratories and activities go forward on a larger scale than has been possible lately. A first class research man is wanted to round out the staff. One routine man has been engaged and another is to be taken on.

CHANGE IN CONSTITUTION.

At the annual meeting on January 30, the following changes in the By-Laws of the Technical Section will come up for discussion:

Article 3—Membership.

1. Membership in this section shall consist of honorary members, members, associate members, junior members and **student members**. Members and associate members only are entitled to vote and hold office; junior members and **student members** are not entitled to vote or hold office but are entitled to all other privileges of membership and may be invited to serve on committees.

6. (New Section). A student member shall be seventeen years of age or over and shall have an education at least equivalent to a high school diploma or the matriculation of an Arts or Science course. He shall be pursuing a course of instruction in a university or technical school recognized by the Council with some idea of entering the pulp and paper industry after graduation.

9. The annual dues for membership in each grade shall be as follows: Members, \$10; associate members, \$10; junior members, \$5; **student members**, \$3—including in each grade subscription to the official organ of the Technical Section, the Pulp and Paper Magazine of Canada.

Besides this matter there are a number of committee reports that will be most interesting and important. Send word to the secretary immediately that you will be present.

TECHNICAL ASSOCIATION IN NEW YORK.

The Technical Association of the Pulp and Paper Industry will meet in New York, February 4, 5 and 6. The Technical Banquet will be held at the Hotel Astor, Tuesday, February 4, at 7.30. The price is \$5 and if the affair is half as good as last year, this is cheap. Discussions will follow on Wednesday and Thursday, at the Waldorf-Astoria. On Thursday night occurs the Banquet of the American Paper and Pulp Association which meets at the Waldorf-Astoria Hotel that week. Intentions of attendance should be made known as early as possible to Mr. T. J. Keenan, 131 East 23rd street, New York.

REVIEW OF RECENT LITERATURE.

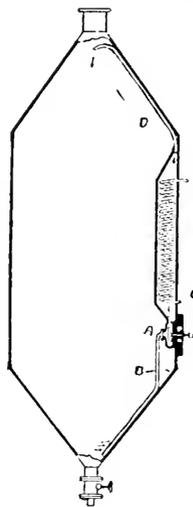
A-1. Sawdust as raw material for paper. R. J. Marx, translation in Tidsskrift for Papirindustri, July 15, 1918, p. 212, GHg.

A-17. Oils and their substitutes. Dr. J. Gram, Papir-Journalen, July 25, 1918, p. 104. Owing to reduced import of lubricants the Norwegian manufacturers have had to replace oils, etc. with various substitutes. The author gives a review of substitutes which have been employed. (Paper given at the Exhibition for Industrial Selfhelp in Christiania, Norway, April 9, 1918).—GHg.

D-5. New method for producing pulp. Svensk Papperstidning, July 31, 1918, p. 325, Chief Engineer Chr. Vig, Union Co., Christiania, Norway, and N. A. Andersen, Hongsund, have invented a new method of manufacturing pulp. The product is a material between ground wood pulp and chemical pulp and it has proved useful in some cases as a substitute for cellulose.—GHg.

E-2. Methods for utilization of waste liquors. Dr. Bjarne Johnsen, paper given in Montreal in J. Soc. Chem. Ind. translation in Tidsskrift for Papirindustri, August 1, 1918, p. 228.—GHg.

F-5. Method for cooking of cellulose. Aktiebolaget Cellulosepatenter, Christiania, Norway, Patent, Tidss-



krift for Papirindustri, July 15, 1918, p. 224. Claims: Method for cooking chemical pulp with indirect heating and with forced circulation of the cooking liquid by means of a heating apparatus. This heating apparatus is characterized by the feature that the heating as well as the circulation are caused by apparatus placed inside the digester.—GHg.

K-12. Ballbearings on paper-machines.—Tidsskrift for Papperindustri, June 15, 1918, p. 180. Various makes of ballbearings used on paper-machines and their advantages and disadvantages. The S-K-F ball-bearing is considered to be the most reliable.—G. Hg.

K-12. The modern news-print paper machine in Canada. Th. Folin, Bergvik, Sweden, Svensk Pappers-tidning, July 31, 1918, p. 318. (Paper given at the spring meeting of the Swedish pulp and paper association, technical section).—G. Hg.

L-5. Paper Yarn. Translation from "Der Papier-fabrikant" in Papier-Journalen, Apr. 4, 1918, p. 38. During recent years, paper yarn of one to five millimeters diameter, has found an increasingly eager demand in the cable industry principally, either as a part or a whole substitute for jute as packing between the lead cover and the steel reinforcement. For this purpose the paper is especially impregnated before it is spun. As a cover of lead mantle cable of waterproof composition the paper yarn is just as suitable as jute, which was previously used. It sticks better to the dead mantle and joins in the composition to a flexible and waterproof cover.

Paper yarn of parchment paper is used for weaving of belts, for light machinery, up to about eight horse-powers, in widths of 30-155 millimeters and in thickness of 5-7.5 millimeters. The yarn is spun impregnated, brought on the looms and the stuff made is sewn together to the desired thickness.

Investigations to determine the results of treatment of the yarn with various chemicals, have been made. A solution of aluminum acetate, partly neutralized with sodium bicarbonate gives a raw hard surface but does not give cohesion of the threads; an after-treatment with soap solution makes the threads flexible, makes them feel moist and prevents absorption of water without any noticeable decrease of strength after the washing.

A gelatine solution mixed with neutral aluminum acetate cements the threads and causes a depreciation of the strength some seventeen percent, but when the threads are moist it lessens the loss of strength.

Gelatine mixed with formaldehyde gives a smooth surface to the yarn, but does not cement the threads. In this case the loss of strength is only eight percent but the loss of strength in moist threads is not so much reduced. Treatment with one percent tannin solution makes the yarn feel soft and flexible and increases the strength about 49 percent, and also has a favorable influence upon the strength in moist form.

Tannin solution with addition of gelatine makes the yarn feel hard and strong, increases the strength about 25 percent and lessens the loss of strength in moist form to only 15 percent. Tannin solution with addition of neutral aluminum acetate makes the yarn feel strong and elastic, increases the strength 44 percent and when moist loses 22 percent.

Weaker tannin solutions have proportionately weaker results. The paper yarn which is marketed contains a considerable excess of moisture, which remains from the spinning process, the presence of this moisture however is not necessarily disadvantageous as the moisture gives the yarn a flexibility which facilitates further treatment of the yarn to finished products. A large number of analyses have shown an average moisture content of thirty-eight percent; the highest moisture content was found sixty-five percent. Pinagel suggests (in "Monatschrift für Textil Indus-

trie", 1916, No. 31, p. 146) as a result of his investigations, that 14.66% be added to the bone dry weight of the yarn when it is sold as a commercial product.—G. Hg.

L-7. Paper yarn in Denmark. Tidsskrift for Papperindustri, June 15, 1918, p. 184. The Norwegian Vice-Consul John Koren, Copenhagen, Denmark, reports that "The Danish Paper-Yarn Company, Limited" has been founded in Copenhagen with a capital of Kr. 250,000, and with the purpose of manufacturing paper yarns for the textile industry.—G. Hg.

L-7. "Cellulon", the new paper-yarn. Tidsskrift for Papperindustri, June 15, 1918, p. 184. The Norwegian Consul General Sebanche, Hamburg, Germany, reports that Gustav Turk's newly invented paper-yarn "Cellulon" has aroused great interest in textile-manufacturing circles in Germany. A company composed of the patent-holders and textile-manufacturers has been formed with the name of "Cellulon-Gesellschaft m. C. H." The manager of the company is Mr. Ernst Sehler of Hamburg.—G. Hg.

P-2. Norway's University for the pulp and paper industry. Tidsskrift for Papperindustri, July, 15, 1918, p. 212, the Norwegian parliament has granted Kr. 200,000, to improvements of the university and it was pointed out by several members of the parliament the importance of the technical education for the pulp and paper industry.—G. Hg.

P-2. Studies of the technique of pulp and paper in Sweden. Papper-Tidning, Apr. 15, 1918, p. 154. Sometime ago the Swedish Society of Civil Engineers appointed a committee to give an opinion as to what lines this new branch — Study of the Technique of Pulp and Paper — in the University should be carried out. This committee has made the following report:

1.—The training for technically educated men for the Pulp and Paper Industry should be, as it is in other industries, completed within four years.

2.—The new study should be under control of the Chemical Department but arrangements should be made so as to facilitate attendance of students from Mechanical Department.

3.—The curriculum for the Chemical Department should be extended to include Machine laboratories and possibly special courses for hoisting and transportation arrangements.

4.—Two special professors, one in Paper technique and one in Cellulose technique should be appointed for this new branch.

5.—Extra courses with laboratory work connected, should be held under suitable conditions, as is the case in other branches of industry. Men, who have already graduated from the University and others with sufficient technical education should be admitted to these courses.—G. Hg.

R-1.—Pulp from the Papyrus grass in Zulu-land. Svensk Papper-Tidning, July 31, 1918, p. 323. The Walmer Papyrus Pulp Company, an English concern recently founded with a capital of £450,000, is commencing to erect a plant in the Zulu-land, South Africa, for manufacturing papyrus pulp.—G. Hg.

R-4. Sweden and the agreement with the Allies. Tidsskrift for Papperindustri, July 15, 1918, p. 223. The pulp manufacturers in Sweden, especially in the northern part of the country, are dissatisfied with the agreement made lately between the Swedish government and the Allies concerning export of pulp and paper and tonnage.—G. Hg.

PULP AND PAPER NEWS



A charter has been granted to the Kyo River Improvement Company, Limited, with a capital stock of twenty thousand dollars and headquarters in Port Arthur, Ont. The organization is empowered to improve and develop the navigation of the Current and McIntyre rivers and their tributaries and to construct and maintain reservoirs, canals, dams, slides, piers, booms and other works for the running, driving, booming, sorting and rafting of logs and pulpwood in the rivers. Among the incorporators are W. A. Kyo and M. Rissanen, of Port Arthur, Ont.

Some publications are now enlarging and making ready for the increased advertising which it is expected will develop in 1919 as the prospects for the publicity business are bright. One leading Canadian monthly has enlarged its pages to 11 x 14 1/4 inches. In other publications where there has been a disposition to cut down the margin to the very closest measure in order to conserve paper during the war, the old margins of an inch or more in width are again appearing.

Fred E. Osborne, a former resident of Belleville, Ont., who is now engaged in the wholesale stationery and paper business in Calgary, was recently elected an alderman in that city, standing fifth on the list of the twelve successful aspirants.

Harry Pullan of Toronto, has returned from a business trip through Ohio and other States, calling upon the mills.

The boys of the junior division of the Y.M.C.A., Ottawa, recently made an educational tour of the pulp and paper mills of the E. B. Eddy Co., Hull, and spent several hours in the various departments. A few days later they were conducted through the immense plant of J. R. Booth, and were delighted and instructed with what they witnessed on every side.

Henry H. McPhail passed away in Toronto recently after a protracted illness. He was the eldest son of the late Edward McPhail of the old Toronto firm of McPhail, Brewer and McPhail, government book printers, of which the deceased was a member. The late H. H. McPhail was seventy-five years of age, and retired from active business some five years ago. He is survived by his wife and two daughters.

E. A. Crippen, manufacturer's agent, Toronto, spent several days in New York recently on business.

The Adams Manufacturing Co., 212 Adelaide Street West, Toronto, have recently started a paper box factory at 107 Duke Street, Toronto, where set-up and folding, as well as fancy boxes of all kinds are being turned out. Mr. Nichols, formerly of A. E. Long & Co., Toronto, is in charge of the plant.

W. B. Fredericks, of Rochester, N.Y., who represents the Diamond State Fibre Co., of Bridgeport, Conn., in part of New York State, as well as Ontario and Quebec, was in Toronto this week calling upon the trade in the interest of fibre board.

Robert Rolland, formerly of Paper Sales, Limited, Toronto, is now residing in Montreal, and has joined

the selling force of the Wayagamaek Pulp and Paper Co., of Three Rivers, Que.

J. H. Weidon, President of the Provincial Paper Mills Co., Toronto, returned this week from a business trip to Winnipeg. While there, he spent some time with John Martin, of the John Martin Paper Co., who is Vice-President of the Canadian Paper Trade Association. Mr. Martin, who has been confined to his home for some months, intends going south to spend the winter, and it is hoped by his many friends that the sojourn will greatly improve his health.

Robert Foulis, superintendent of the coating paper plant of the Provincial Paper Mills Co., at Georgetown, Ont., who has been confined to his home from the effects of ulceration of the teeth, is able to resume his duties.

S. F. Duncan, of Toronto, secretary of the Port Arthur Pulp and Paper Co., spent this week at Port Arthur on a visit to the plant, which is very busy at the present time.

A. P. Costigane, Safety Engineer of the Ontario Pulp and Paper Makers' Safety Association, paid a visit to the mills in the Niagara district this week in the interest of Safety Work.

Recent advices received from Vancouver are to the effect that Hon. T. D. Pattullo, Minister of Lauds, for British Columbia, is having surveys made of the Queen Charlotte Islands water powers with a view to assisting the establishment of a large new pulp and paper industry there.

J. N. Greenshields, K.C., of Montreal, formerly President of the Wayagamaek Pulp and Paper Co., has been elected President of the Marconi Wireless Telegraph Co., of Canada, succeeding A. A. Allan.

The Canada War Thrift Book has been prepared, and is being sent out to all children of ten years of age and over. It explains, among other things, why Canada participated in the great war, why saving is necessary, and what constitutes a good investment. W. J. Dunlop, editor of "The School," and Lecturer in the Faculty of Education, University of Toronto, has been appointed director of the Schools Section of the National War Savings Committee of Canada. To assist in the thrift work, a fortnightly journal, entitled the "Thrift Magazine," will be published and distributed free to all the teachers in the Dominion. The magazine will be attractively illustrated, and will be valuable to teachers from an educational point of view.

Sir Arthur Pearson, Bart., the eminent English newspaper proprietor and publisher, spent the past week in Toronto and addressed large meetings of the Canadian and the Empire Clubs. He spoke on "The Blind Problem," particularly in reference to those British soldiers who has lost their sight in battle.

Dr. J. A. Macdonald, former editor-in-chief of the Toronto Globe, who has been spending the past year and a half in the Orient, principally in Japan, has returned to Toronto.

THE MARKETS

CANADIAN MARKETS.

Toronto, January 6.—The present is a transition period in the pulp and paper market and, after finishing with stock taking and inventories, jobbers and large consumers are awaiting developments. There will be no material change in the trade status until the middle of the month at any rate. Buyers are holding aloof in the expectation that prices will fall and are the bears of the situation while the mills are the bulls. Each is watching the other closely and just how prices will go is a matter of conjecture. Meanwhile quotations in all lines are holding fairly firm and there is a spirit of confidence. If there should be a break, there might be a general reduction all along the line.

On sulphite pulp the prices are a little easier but on groundwood pulp they are stiffer as grinding conditions are not so good and surplus stocks have been used up. There seems to be a disposition on the part of those who have failed to study the trend of affairs carefully, that, in the natural order of things, prices should come down but, basically, there is no economic ground for the fall. Pulpwood is still high and contractors are now finishing the cut for the season although the farmer and the settler will go on until spring. The release of men from the various munition plants came too late last fall to affect the general conditions in the woods materially. If the war had ended in August or September instead of November there would have been sufficient labor freed to improve logging conditions, but the bulk of the cutting was done before contributing circumstances had a chance to change general operations. Pulpwood is still high in price and will remain so for many months. Labor, while more efficient, is commanding as good wages as ever and the price of all supplies is yet in the ascendancy. When there is a general come-down in these things then finished products may be disposed of at a less figure than they are to-day, but just when that time will come, only the period of reconstruction and the readjustment will tell. Buyers are hanging back, as already stated, but every firm is expecting big business. The export trade is looming up splendidly and during the months of December and November there was shipped from Canada to England, Mexico and South Africa some 6,000 tons of sulphite pulp. Last year at this time, owing to the tie-up in transportation, there was on the hands of one Canadian

pulp firm fully 5,000 tons. This year there is not more than a week's supply of news sulphite in all the plants, and four days of book sulphite. The proportion of the latter which will come on the market during the next few months, will be considerably increased. Contracts are being continued at \$95 for book sulphite and bleached is commanding \$125 on contract at mill. So far as the demand is concerned it is a case of "watchful waiting" and will be for some little time yet.

The annual meetings of all the pulp and paper companies will soon be held and there is every indication that the results will be very satisfactory. Not only is a great future in prospect for the export trade in pulp and paper so far as Canada is concerned if the necessary tonnage is provided. It is understood that one book mill is having a new machine built in Canada which it will install during the coming summer. It is reported that another large American concern, which has built a great number of paper making machines for Canadian industries and has of late been devoting considerable attention to ship building, will establish a Canadian branch which will be located in Toronto.

One of the natural activities that is bound to follow the expansion of the Dominion as a rapidly growing pulp and paper country, is the manufacture of paper machines on this side of the boundary. Pulp mill equipment has been built in the Dominion for a number of years but, with the advent of paper making machines and possibly huge printing presses, a large new undertaking will arise. It is understood that one big concern, which during the war placed an order for two Fourdriniers, will now go ahead and install them, while the fact that another newsprint firm will add an extra machine, is a sign of the growing proportions of the industry. Still another organization will proceed and erect a large book and writing mill just as soon as assured of reasonably prompt delivery of equipment. A leading paper mill engineer was in Toronto recently from the west consulting with two firms which have extensions under consideration. One mill will install another unit, while a department of a Niagara peninsular concern will be enlarged.

In the book and writing line some mills report that orders are coming in quite freely and that nice orders have been received during the past few days. The specialty mills have also secured some good allotments. Several paper box factories are busy. There

Scandinavian American Trading Co.

50 E. 42nd STREET

TELEPHONES 2074
2075 MURRAY HILL, NEW YORK

Have an extensive
and steady market
for

KRAFT PULP

When you have
any surplus to
offer write us

has been an advance of half a cent in rope paper.

In the rag and paper stock market there is a general lowering of prices and mills are still holding aloof. Manila and white envelope shavings are piling up, one dealer having several car loads on hand. There is a pretty fair demand for news and mixed papers. All lines of rags are quiet with the exception of a movement in white and mixed lineeys.

The paper trade as a whole is hopeful of matters picking up substantially in a few days and the outlook is good. The industry generally is passing through a transition period at present and it is difficult to accurately gauge the readjustment situation. There is quite a divergence of opinion regarding the business that will develop during the next few months, but while production costs are so high, along with wages and other contributing factors, there really does not seem any immediate prospect of a fall in prices although certain mills are now pretty well caught up with orders and can make quick deliveries.

Pulp.

F.O.B. Mill.

Groundwood pulp	.. . . .	\$92.00 to \$93.00
Sulphite, news grade	.. . . .	\$72.50 to \$80.00
Sulphite, easy bleaching	.. . . .	\$95.00
Sulphite, bleached	.. . . .	\$125.00
Sulphate	.. . . .	\$105.00

Rags and Paper Stock.

No. 1 white envelope cuttings	.. . . .	\$4.25
No. 1 soft white shavings	.. . . .	\$4.00
White Blanks	.. . . .	\$1.15
Heavy ledger stock	.. . . .	\$2.35
No. 1 magazine	.. . . .	\$1.50
No. 1 book stock	.. . . .	\$1.35
No. 1 new manilas	.. . . .	\$1.80
No. 1 print manila	.. . . .	\$1.25
Folded news	.. . . .	\$1.00
Over Issue	.. . . .	\$1.15
Kraft	.. . . .	\$4.00
No. 1 clean mixed papers	.. . . .	.85c.
No. 1 white shirt cuttings	.. . . .	\$12.00
No. 2 white shirt cuttings	.. . . .	\$8.25
No. 1 unbleached cotton cuttings	.. . . .	\$10.25
No. 1 fancy shirt cuttings	.. . . .	\$8.50
No. 1 blue overall cuttings	.. . . .	\$9.00
Bleached shoe clip	.. . . .	\$8.75
Unbleached shoe clip	.. . . .	\$8.50
White cotton hosiery cuttings	.. . . .	\$10.00
Light colored hosiery cuttings	.. . . .	\$8.00
New light flannellette cuttings	.. . . .	\$8.50
No. 2 white shirt cuttings	.. . . .	\$8.25
City thirds and blues (repacked)	.. . . .	\$3.25
Flock and satinettes	.. . . .	\$1.90
Tailor rags	.. . . .	\$1.80
White lineeys	.. . . .	\$9.00
Mixed lineeys	.. . . .	\$4.50

RIORDON ISSUE.

A special general meeting of the shareholders of the Riordon Pulp and Paper Co., will be held at the head office on the 31st instant, at noon, for the purpose of considering, and if deemed advisable of approving and confirming a resolution to authorize the creation and issue of bonds, debentures, or debenture stock, amounting in the aggregate to the sum of \$3,000,000. Proxies are being issued for shareholders who are unable to attend the meeting.

NEW YORK MARKETS.

New York, January 4.—The turn of the year has brought little change in the paper market. Conditions remain practically the same and buyers and sellers alike are holding aloof pending developments which will give them a clearer insight into the future. That big business lies ahead is the opinion expressed on all sides, yet there is little disposition shown among traders to operate on a broad scale for the moment. Manufacturers at present are busily engaged in compiling inventories and in making repairs to mill equipment, with the result that they are giving little attention to the purchase of raw material. Jobbers and consumers of paper also are busy with stock-taking and therefore are not inclined to augment their holdings for the moment. There is every reason to believe that the changing point is not far off and that the turn of the market will be for the better. Indications, virtually without exception, point to a revival of trade activity on a broad scale, and the only question now in the minds of trade factors is just when this will occur.

Newsprint continues to be in relatively better demand than most other grades of paper. The majority of mills are kept busy making contract deliveries, but current demand has been fairly brisk, and prices hold up well. Some mills have slowed down a bit in their production, but this is viewed as nothing more than customary for this season, and has resulted in strengthening the tone of the market to an extent, owing to the fact that there is not as large a supply to fill the demand. There appears to be a ready sale for all the newsprint now being produced and manufacturers report having no difficulty in marketing their product.

Book papers are slightly easier in tone. Throughout the dull period of the last several months, book paper is about the only grade that has dropped in price to any appreciable extent. It is difficult to explain just why this is so. Possibly manufacturers have not been imbued with as much confidence regarding the outlook as producers of other grades and, in an effort to secure orders, have cut prices. Fine papers rule firm. Buying has been light this week, but manufacturers have shown no disposition to shade quotations, arguing that the cost of production remains fully as high and that they consequently must obtain the same prices for paper. There is an almost total lack of important demand for the higher qualities of bonds, linens and ledgers, however, and there is no strong factor apparent in the market other than expectations of manufacturers for an expansion in demand shortly. Whether prices will be lowered when buying is resumed is a matter time only will tell. For the present, mills and jobbers alike appreciate that price-cutting would result in attracting few buyers, and they consequently are following a wise policy and are continuing to quote the same figures as previously.

Coarse papers also have been in poor demand and few sales of sizable volume have been recorded during the week. Prices nevertheless are maintained, with No. 1 domestic kraft quoted at around 10 cents per pound and No. 1 jute manila at 12 to 13 cents. Boards are quiet but steady. Chip board is selling at an average figure of \$60 per ton and news board at \$5 higher. Consumers are doing little buying, as is usually the case immediately following the holidays, but indications point to a revival of activity in the not distant future.

WOOD PULP TRADING CO., Ltd.

30 East 42nd Street, New York City

Tissues are unchanged, both demand and prices remaining about the same as previously reported. Government demand for roll tissue is still the strongest factor in the market, and the heavy movement of this grade tends to sustain values on other qualities. No. 1 white tissue is selling at 15 to 17 cents in earload lots, New York, while No. 2 white is quoted at 11½ cents upward.

GROUNDWOOD.—A firm market prevails for mechanical pulp. Grinders are shipping steadily to contract customers, while the current demand is ample to absorb all the surplus production. In fact, it is stated authoritatively that shipments for the present are substantially in excess of the output, which condition can work only for a firm market. Grinders quote in the neighborhood of \$30 per ton at the point of shipment for strictly No. 1 pulp freshly ground. Quotations range from this figure up to \$34, depending on the amount and the grade of pulp involved.

CHEMICAL PULP.—The leading feature of the chemical pulp market for the week has been the placing of contracts by consumers for domestic and Canadian pulp. Quite a tonnage of both bleached and unbleached sulphite has been contracted for and the prices realized are said to compare very favorably with those ruling heretofore. Contracts have been limited to a period of two months, covering January and February. Producers and buyers alike have shown unwillingness to enter into longer engagements, presumably not because they expect any drastic changes in the market during the current month and next, but because of the great uncertainty of the future. Bleached sulphite has been bought on contract at from 5.50 to 6.00 cents a pound. For spot lots, slightly higher prices are asked, around 6.50 cents being the figure generally quoted. News grade sulphite is selling at around \$75 a ton at the pulp mill, while domestic easy bleaching sulphite is quotable at an average price of \$85. Kraft has been in less demand and prices are slightly easier. Domestic kraft is now obtainable at \$95 per ton, and indications are that on a firm test of the market, some supply could be secured at even lower levels.

RAGS.—The rag market continues to be devoid of important activity. Consumers display merely passing interest in most descriptions of material, and about the only grade that has moved with any degree of regularity is roofing rags. Demand for roofing stock, however, has appreciably quickened. Felt mills are reported to have received orders for extensive quantities of roofing paper, and consequently are now in the market seeking supplies of rags. The increased demand for the low qualities of rags has, as is usually the case, acted to strengthen the tone of the better grades, though there has been no worth while change in quotations. Roofing stock of No. 1 grade is selling at around 2.15 to 2.25c delivered mills, with 2.00c delivered freely bid for mixed satinet. No. 1 old whites are offered at 6.00 to 6.25c f.o.b. New York, new white shirt cuttings at 11.00 to 11.50c and repacked thirds and blues at 2.85 to 3.00c. As would be expected in view of the slow movement of rags into consuming channels during the past several months, dealers in general have quite some stock on hand, yet viewing the situation as a whole, there appears to be a comparatively small accumulation of rags in the market. The reaction in prices since the signing of the armistice has decreased collections and graders tell of having considerable difficulty in locating usual supplies

of mixed material. It is on this that dealers base their hopes for higher prices when mills resume buying, and few holders evince a desire to sacrifice stock at prices now offered.

PAPER STOCK.—Waste paper is moving toward mills in fairly large volume, and prices rule firm. Certain manufacturers are reported to be buying quite actively, not because they immediately need stock but presumably in an effort to store up as large supplies as possible at ruling prices. Indications are that irrespective of what conditions may be during the forthcoming months, prices on old paper can hardly go lower. Values already have worked down to levels where packers are provided with a small margin for profit under prevailing labor costs and the high initial cost of waste paper, so that the probabilities are they will refuse to produce material if prices go off further, in which event scarcity of stock would undoubtedly act to again elevate values. No. 1 soft white shavings have been offered to mills at 4.75c per pound, New York, and slightly lower, while hard white shavings of No. 1 grade are available at 5.75 to 6.00c. Books and magazines are selling at about 1.60c. f.o.b. New York, or in the neighborhood of 2.00c, delivered western mills, and 1.75c, delivered eastern mills. No. 1 mixed paper is worth around 60c. per hundred pounds New York, and folded newspapers 80c. Sales of the latter at 85c. New York have been recorded, but most transactions have been made at the lower figure. Kraft and manila paper is firm and in moderate demand.

BAGGING AND ROPE.—Dullness still characterizes the market for scrap bagging and old rope. Few consumers are buying, and prices are easy. No. 1 scrap bagging is available to mills at 2.75c, a pound f.o.b. New York, and possibly this price could be shaded in some quarters. The movement is so small, in fact, that it is difficult to quote a definite price, none having been established. Old manila rope is quotable at 5.00 to 5.25c, a pound New York. This price also is mainly nominal.

WANT BOOK PAPER PRICES FILED THREE MONTHS AHEAD.

At a meeting of the book and writing section of the Ontario division of the Canadian Paper Trade Association, held in Toronto last week in the office of the secretary, N. L. Martin, it was decided that all the members should attend the special meeting, which will convene in the Ritz-Carlton Hotel, Montreal, on Wednesday, January 15, when a conference will take place with the book and writing paper manufacturers on various post-war problems.

One concession the Association will endeavor to secure from the manufacturers, will be a guarantee that fixed prices on all lines of flat papers should prevail for three months and a request that the trade be given an assurance to this effect.

It is pointed out that the box board manufacturers have adopted such a policy and notify their customers in ample time what figures will cover the coming three months. These notices are generally sent out fully a month before the succeeding quarter and the effect has been very beneficial to paper box factories as it has enabled the plants to proceed, make contracts and carry on business, for a definite price for the supply of raw materials is thus assured. Paper box makers are thus in a position to take aboard new busi-

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ness for several weeks ahead, and know exactly where they are at.

It is thought that if a similar procedure was followed by the book and writing paper manufacturers it would prove a stimulus to jobbers entering the market. They would then be able to give their customers, who are generally printers and large consumers, every assurance that whatever prices are quoted would hold good for three months. This would place negotiations on a more stable basis all around.

OTTAWA NOTES.

The sitting of the Paper Control Tribunal on Wednesday and the likelihood that the Dominion Government will take some steps to protect Canadian newspaper publishers for several months more at least, were the two outstanding features in the newsprint situation at Ottawa this week.

While nothing had actually happened up to the beginning of the week it had been heard that the Government intended continuing the restrictions on the newsprint manufacturers in a modified form, and making it necessary for the manufacturers to keep the Canadian newspapers supplied, during the period of reconstruction.

How long the proposed new regulations will remain in force is a question. They will likely stay for three or four months, if not longer. The former control of the industry was brought about by authority of the War Measures Act, and with the signing of peace it is believed that the power of this act ceases. On the other hand there has been general talk at Ottawa that some of the legislation brought about under the War Measures Act may be retained and made permanent. Quite a bit of discussion in this connection will likely be heard at the next session of parliament.

The exceptional open weather which prevailed in the Ottawa district up to the end of 1918 caused the heaviest flow of water in years at the Chaudiere, and materially aided the operation of grinders at the E. B. Eddy plant. Mr. Millen reported general conditions around the Eddy plant as running smoothly, with a strong demand for the product of the tissue mill, mostly in toilet papers. The paper bag department is also going strong.

Lieut. Millen Pratt, M.C., grandson of Mr. George H. Millen, and formerly stationary engineer of the E. B. Eddy Company, is now at Mons, and was among the first of the Canadians to enter that place. Lieut. Pratt is not expected to return to Canada before some time in May.

Pulpwood and lumber operations in the woods have been speeded up by John R. Booth. Efforts are being made to equal last year's cut. The woods labor situation with the Booth interests has improved considerably within the last month. No trouble in the rail transportation of pulpwood has been reported.

A further step by the Council for Scientific and Industrial Research, toward the facilitating of the practical application of science to industry, was recently shown at Ottawa by the appointment of a committee consisting of Dr. R. F. Ruttan, of McGill University, Dr. A. S. MacKenzie, of Dalhousie University, and Dr. A. B. Macallum, administrative chairman of the Research Council to devise ways and means of aiding scientific journals in Canada, and of securing the publication and dissemination of scientific papers.

The Council has also made an appropriation of \$2,000 to aid research work in connection with the Mari-

time Province Fish Canning Association.

Mr. W. R. Givens, publisher of the Kingston Standard, left recently for Florida, where he will spend the winter. He recently recovered from a long siege of illness following influenza and pneumonia.

A commission composed of Messrs. Slack, Lewis and Tarte, has begun investigating conditions at the Dominion Printing Bureau at Ottawa, with a view of endeavoring to place the Bureau on a business footing similar to private establishments, and to locate any waste that is occurring. When the report of the Commission is made it is understood that it will disclose that the Bureau is considerably overmanned, particularly outside of the session period, the staff carried throughout the year being similar to that employed when the load is at "peak."

The Canadian Cabinet has endorsed recommendations brought before it by a committee of the Council of Scientific and Industrial Research for the removal of the excise tax on alcohol for scientific, hospital and industrial purposes. The decision of the Canadian Cabinet follows the lead of the Governments of Great Britain and the United States and other countries.

Mr. R. H. Campbell, director of the Forestry Branch of the Department of Interior, has returned to his duties at Ottawa, feeling little worse from the effects of an accident which nearly cost him his life.

The expenditure of the War Trade Board since its inception up to Nov. 30th, 1918, was \$98,153. It was estimated that another \$30,000 would be required to meet outstanding accounts and expenses up to the end of the year.

A writ for \$10,000 damages was recently issued against John R. Booth at Ottawa, in connection with the death of Arthur Dugas, aged 16 years, who lost his life in the Booth lumber yards on October 10th owing to the collapse of a gin-pole around a pile of lumber where the youth was playing with other companions.

Worthen E. Brawn, chemical engineer with the Spanish River Pulp and Paper Mills, was married, Dec. 24th, to Miss Mildred Greenleaf, of Southport, Maine. They will reside in Sturgeon Falls, Ont. Congratulations, "Hen."

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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No. 3

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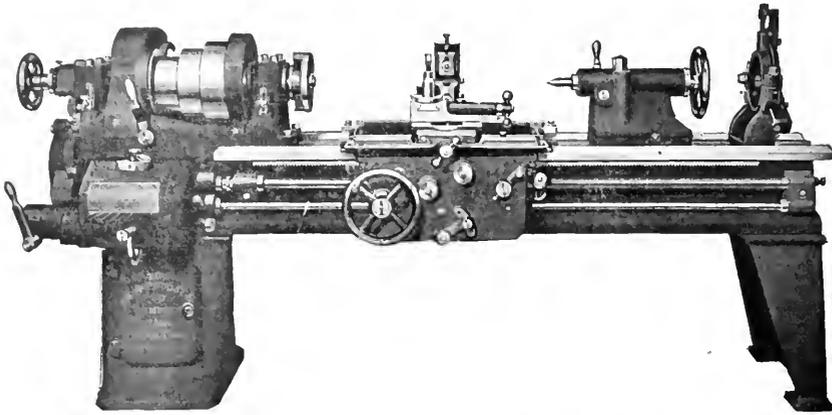
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EDITORIAL

ANNUAL CONVENTIONS.

The call has again gone out to the Pulp and Paper Industry to gather for the annual meetings to be held shortly in Montreal and New York. The Montreal meeting is for Jan. 30-31, and the New York for practically all of the following week. This is the usual time for these conventions, and they are looked forward to by all those who have the interest of the industry at heart, as opportunities to come together, not only to discuss the individual problems of the various members, but to get acquainted with each other and through personal contact and the good fellowship of the crowd come to an appreciation of the unity of the industry. One of the distinct advantages of such a meeting is the opportunity to learn something of the problems and progress in other lines of manufacturing than one's own. It is the only time that paper makers from all over the country get together and the annual event has a great influence toward cementing together what otherwise might have a tendency to be localized interests from the widely scattered pulp and paper centres over this vast continent. The Canadian meeting is, of course, the smaller of the two, but observation leads us to believe that for enthusiasm and concentrated thought on the big problems of the industry it is fully the equal of the larger gathering in New York.

The present time is particularly one of enormous problems, as well as of large and attractive promises. The future is very bright for pulp and paper making in Canada. The present moment, however, reminds us of the proverbial saying, "that it is darkest just before dawn." In other words we are facing the difficulties attendant upon the demobilization of our armies and the reconstitution to some extent of our economic life so as to absorb the returning soldier and the dismissed munition maker into peaceable pursuits with the least disruption of the normal current of our business and social life. The past has put a severe strain on the manufacturer of paper products as well as on other business men of our country. The strain has doubtless been even heavier on a certain section of our paper manufacturers than on any other body of men in the Dominion. Besides being faced with most extraordinary conditions of raw material and labor supply they have had to contend with the unfortunate harassing of their necessary customers and the persecution of Government—not regulation but restriction. In spite of these

difficulties the year has been, for the most part, favorable, although one concern has been forced into liquidation and another has undergone a very considerable reorganization.

The future presents a new set of problems and it is only the thoughtful concentration of effort, and constant endeavor to do the absolutely right thing that will ensure their solution. The possibilities of export trade open up a new vista for the expansion of our industry. Many neutral countries that have been dependent upon Scandinavia and central Europe for paper supplies would have been starved had it not been for the meagre shipments that have been sent from time to time by American and Canadian manufacturers. It is curious to note that Canada has been able to step in and help supply those products which the war has shut off from these countries. Our enormous forest and power resources must form the basis of the world's newsprint, at least for the Western Hemisphere and Australia. The United States will, of course, continue to make the majority of its own needs, but its export will grow and its domestic requirements will grow, and back of these necessities stand the forests of Canada. Canada must extend her manufacture of wood pulp papers to fill the void, as American machines go on better grades. And our production of higher grades will also increase.

Our sturdy spruce and scrubby jack pine and vast stretches of poplar must be the bank deposit of timber whose annual increment will continue to support the pulp and paper mills of the continent. Their proper utilization and distribution as finished product is one of the big problems before us, in fact it is a group of problems in itself.

Perhaps the largest subject for the best thought of our biggest minds is the proper relation between the workmen and his employer. New conceptions are continually arising. New demands and new opportunities appear. Workmen are more intelligent than they used to be. They are better organized and they are coming to have a clearer appreciation of the dignity of labor and the necessity for its intelligent direction. The employer, too, must grow in his conception of service. Selfish personal gain is no longer to be the criterion of success. A concerted effort by the whole industry is necessary in order that the pulp and paper makers of Canada may really be the benefit to the community that they should be, and the greatest source of strength in our economic development.

It is worth while for men to gather and join their minds in the contemplation of these problems. United effort is the only means of their solution. Canadian manufacturers should all be present, or at least represented, at the annual meeting, the last of this month. Americans should endeavor to gather in New York the first week in February, and as many of each as possible should attend the convention of the other.

Technical Men, Too.

The usual high standard of program is promised in the plans of the Technical Section for the meeting this year. It is largely on the work of the technical man (and this term includes the superintendent and foreman, who really knows his job), that the stability and success of our industry depend. Presidents and managers could well spend the time to attend the meetings of this Section, and every mill should certainly send every available man who has anything to do with planning and controlling the processes of manufacturing. The program this year includes a discussion of power problems that will be particularly valuable.

Notice of your intention to attend should be sent promptly to the Secretary.

Tentative Program of Sixth Annual Meeting Canadian Pulp and Paper Association, Ritz Carlton Hotel, Montreal, January 31, 1919.

10 a.m.—Business meeting, Vice Regal Suite; Minutes of last annual meeting; Presidential address; Reports of sections; Report of secretary; New business; Election of officers.

12:30 p.m.—Meeting of sections.

1:30 p.m.—Luncheon, in the Ball-Room; Speaker will be announced.

3:30 to 7:10 p.m.—Recess with meetings of sections.

7:10 p.m.—Reception by the officers.

7:30 p.m.—Dinner, in the Ball-Room.

Amongst those who will speak are: Sir John Willison; Brig.-Gen. J. B. White; Geo. W. Sisson, Jr., President American P. & P. Association.

WITH THE WOODSMEN.

In connection with the annual meeting of the C. P. & P. A. there will be an exceedingly important meeting of the Woodlands Section. Among the items on the program we find an address on "Forestry in Scotland," one on "Photographs from Airplanes," especially mentioning their use in locating forest fires, and a discussion on the removal of slash.

Sault Ste. Marie, Ont., has made a good start in organizing night classes for workers in the industries of that busy centre, especially the employees of paper mills and steel mills. Mr. C. H. Speer, of the Algona Steel Corp., has given generously in time and energy to the work, and his enthusiasm has inspired others laboring in the good cause. We need more efforts of this kind in Canada.

In an article showing the growth and importance of the pulp and paper industry in Canada, the Toronto News states that the United States took about 89 per cent. of our pulp and paper output in 1917. This is true only of news-print paper. The table giving the number of mills in each province and their total daily capacity is misleading in not stating whether the product is pulp or paper. For instances, it gives 3 mills in Nova Scotia, (there are really 6), all of which make only pulp, and 4 in New Brunswick, only one of which is equipped to make paper.

A great feature of the coming meeting of the Technical Section will be a film showing how coal is mined and distributed, and how it should be used. Managers and engineers should see it and make use of the points it teaches.

TREES.

By JOYCE KILMER

(Who Gave His Life in France.)

I think that I shall never see
A poem lovely as a tree.

A tree whose hungry mouth is prest
Against the earth's sweet flowing breast.

A tree that looks at God all day
And lifts her leafy arms to pray;

A tree may in the summer wear
A nest of robins in her hair;

Upon whose bosom snow has lain;
Who intimately lives with rain.

Poems are made by fools like me,
But only God can make a tree.

DON'T MISS THESE.

Dr. Kriebel's address on "Sugar content of waste sulphite liquor."

Dr. Neilson's paper on "Indirect system of cooking sulphite pulp."

C. F. Buss on "Waste papers and their utilization," John Stadler on "The application of power in pulp and paper mills."

E. B. Wardle on "Power distribution in pulp and paper mills."

And don't miss the movies at the Technical Section, January 30 and 31.

ADDITIONAL ALLOWANCES FOR ENGLISH MILLS.

The Controller of Paper announces that as the claims for tonnage under the recent special allocations are smaller than were anticipated, and the Government requirements are in course of reduction, it is proposed to distribute the estimated balance in the form of a further two months' proportion of imported materials, paper and cardboard, or paper and cardboard manufactured wholly or mainly from imported materials, to all importers, manufacturers, or dealers.

Beating Tests¹

By E. SUTERMEISTER,
Westbrook, Me.

The beating test for papermaking fibres, which was originally described by the writer in Paper for November 10, 1915, has been adopted as a standard test by a very considerable number of mills and in most cases valuable results are being obtained. However, a consideration of papers appearing in the technical journals within the last two or three years shows that different observers frequently obtain conflicting results and that at least two different methods of applying the test are in use. The following notes and discussions are therefore offered in the hope of stimulating further experimentation along these lines and to call attention to certain points which need verification by more extended research.

The effect of certain chemicals on the time of beating was carefully investigated by Mansfield and Stephenson², who worked with bleached sulphite fibre and demonstrated that by beating in the presence of dilute solutions of caustic soda, sodium carbonate, ammonia, or zinc chloride far greater strength was developed than when the fibre was suspended in pure water during the beating treatment. These results appeared so significant that a part of the experiments were repeated by the writer who also worked with bleached sulphite. The tests were made in apparatus of practically the same size as that used by Mansfield and Stephenson and the same cycle of operations was carried out. The results as compared with those of Mansfield and Stephenson are given in the accompanying table.

It is obvious that such radical differences as are shown by these two series of tests can hardly be accounted for by the personal factor or by possible differences in humidity at the time of testing the sheets for bursting strength. It seems probable that the greater part of the difference is due to the fibres used; possibly the cooking conditions were quite different; or the method of bleaching may have had a considerable effect; or some unknown factor may have caused the variations.

Table of Comparative Results.

M. & S.			E. S.		
Chemical used % on fibre	Bursting Strength in lb	Gain in Strength %	Chemical used % on fibre	Bursting Strength in lb	Gain in Strength %
Blank	51.3	....	Blank	49.6	....
1% Na ₂ CO ₃	77.4	49.5	0.2% NaOH	53.5	7.9
3% "	86.0	66.1	5.0% Na ₂ CO ₃	49.3	0.6
5% "	68.6	32.4	Blank	38.6	...
10% "	88.4	70.2	0.5% NaOH	46.2	19.7
5% NaOH	72.2	39.4	3.0% Na ₂ CO ₃	45.8	18.7

There must be a reason for such differences but it can only be discovered by a long series of tests on a large number of different samples whose methods of preparation are positively known. In the meantime it remains problematic whether or not any given fibre will be strengthened by beating in the presence of alkali.

This certainly demonstrates the danger of drawing sweeping conclusions from tests on a single fibre and illustrates how important it is for any individual manufacturing plant to test its own particular raw materials.

In view of the criticism just made, the following information is given as suggestive of a possible line of research rather than as a finished piece of work.

It is generally conceded that sulphite pulp which is used in its original wet condition produces stronger paper than that which has been dried by passing over the steam-heated cylinders of a paper machine. It has also been demonstrated in the case of a considerable number of fibres that the beating test applied to wet fibres gives sheets of greater strength than are obtained from the same fibre beaten after air drying. The difference is probably due to changes in the colloidal characteristics of the fibre which make it less susceptible to the so called hydration after it has once been dried out. Whatever the reason, it is obviously desirable to find some way of treating dry fibre so that it will develop as great strength as it would if it had been beaten before it had been dried at all.

To see what could be done along certain lines samples of steam-dried, bleached soda poplar, and air-dried, bleached sulphite spruce were treated with solutions of various chemicals for one to three weeks. The soluble materials were then removed by careful washing and the wet fibres remaining were beaten in a pebble mill in the standard manner. The table reproduced herewith shows the treatment given and the bursting strength, in pounds per square inch, of the hand mould sheets:

Table of Treatments and Bursting Strengths

Treatment given	Bursting Strength			
	Soda fibre		Sulphite fibre	
	1 week	3 weeks	1 week	3 weeks
Blank | dry	22.2	....	42.6	....
Blank | wet . . . . .	....	....	50.7	....
Water only	23.0	23.5	49.1	55.9
2% NaOH solution	19.5	19.1	40.8	50.2
3% tannic acid solution	17.2	20.2	35.7	42.2
Weak bleach solution	11.8	7.9	50.1	34.4
2% CaCl ₂	21.3	21.2	51.6	52.3
5% NaCl	21.1	22.5	49.3	58.2
1% ZnCl ₂	20.4	20.0	54.1	52.8
2% HCl	19.1	18.8	52.1	46.5

None of these treatments, except that with water only, has caused any increase in the strength of the soda fibre, while bleach and acid, as would be expected, decreases the strength. In the case of the sulphite fibre, bleach and hydrochloric acid at first increase the strength up to its original wet strength, but further soaking causes a very marked decrease. Of the other tests water and solutions of calcium, sodium and zinc chlorides cause decided increases in strength. Additional tests with a foreign bleached

¹From Paper, Dec. 11, 1918.

²Pulp and Paper Magazine, Oct. 1, 1916.

sulphite indicated that the gain in strength on soaking in water or in a solution of zinc or sodium chloride practically reached a maximum in from four to seven days and that beyond that time further soaking caused no change.

This brings up the question of change of strength when fibre is stored dry in bales or rolls and wet in drainers or laps and the following observations may be of interest.

A sample of dry, unbleached sulphite was stored where exposed to air, light, and all normal indoor changes of humidity from October, 1913, to July, 1917, and during this period frequent beating tests were performed. The bursting strength at the start was 34.8lb and at the end 22.9lb and this decrease in strength was accompanied by a change in the fibre which made it less water absorbent and far harder to break up into pulp.

In contrast to this test were the results of two others, one on fibre containing 50 per cent and the other 21.5 per cent of moisture. These two lots were stored in tightly closed glass jars so that no moisture could escape and their bursting strength remained practically constant for one-and-a-half and two-and-a-half years, respectively.

Results very similar to these last were obtained with bleached soda and sulphite fibres stored in drainers in the mill. Each kind of fibre was bleached and run into its individual drainer where it was allowed to season but was not washed at all. At intervals samples were taken from the top and bottom of each drainer and subjected to the beating test with the results indicated in the accompanying table:

Table of Bursting Strength.

Days in drainer	Soda Poplar		Sulphite Spruce	
	Top	Bottom	Top	Bottom
0	22.1	25.7	54.7	52.7
4	24.3	28.9	....	....
9	28.3	27.8	56.2	53.7
16	27.0	29.9	50.0	51.7
23	25.1	26.3	50.8	49.1
29	....	....	50.3	52.6

The changes in bursting strength during the period covered by these tests are decidedly irregular and are all of such a magnitude that they might almost be caused by variation in humidity or by unavoidable minor differences in the method of handling the test. They leave the question of seasoning still open to discussion and emphasize the importance of carrying out much more extended tests and above all of improving the technique of the beating tests so that minor differences in the results can be depended upon more surely as showing differences in the fibre.

It is next desired to comment briefly on the very interesting paper by R. S. Hatch, which appeared in Paper for October 3, 1917.

The method of operation adopted by Hatch is to beat samples ten, twenty, thirty, forty and fifty minutes and note the maximum strength and also the time necessary for its development. This is a distinct departure from the original plan which was to beat all fibres for the same length of time and note differences in the strength developed. It cannot be said that one method is right and the other wrong as the best method of testing depends on the type of paper being made and on the length and character of the treatment given in the beater. The method which gives satisfaction in a book-paper mill may not be so suitable in a plant manufacturing writing papers and yet either proce-

dures may give perfectly reliable comparative results provided the tests are carried out in a standard manner and with sufficient understanding of the factors which influence the results.

Mention is made by Hatch of the fact that after beating for a certain length of time some pulps tend to roll up into knots which must again be reduced to a uniform pulp by some after-treatment if satisfactory sheets for strength tests are to be made. It would appear that the formation of these knots must have a marked effect on the test as carried out by Hatch since the fibres inside the knots cannot be much influenced by subsequent beating and the final result will be a mixture of fibres, some of which have received full treatment and some only partial beating. It is hardly to be expected that the bursting strength in such a case will be as great as though all of the fibres had received uniform treatment. Moreover, the time of the formation of these knots must have an influence on the final result; if for any reason one pulp develops knots before another the protection from beating starts earlier, the inner fibres are still more raw and the tests of the two pulps will probably diverge more than they would if knot-formation took place at the same time.

This knot formation probably depends on the conditions of beating, as the proportion of stock to water, the volume occupied by the stock, etc., as well as on the kind of fibre being treated. In the four or five years in which the test has been carried on under the direction of the writer a great number of different grades of pulp have been tested yet no case of knot formation has been observed. This leads to the suspicion that the size of the pebble mill is quite largely responsible for this trouble since it was observed some time ago by several workers who were using somewhat larger jars. It would be very interesting to study this knot formation in detail and see what are the principal factors causing it. Elimination of knots might then prove possible, resulting in increased accuracy in the results.

If the formation of knots depends on the size of the jars it is quite possible that of two jars supposed to be the same one might cause them and the other might not. For example, consider the case of a double jar equipment recently purchased; one might expect the two jars in the same frame to be of practically the same dimensions but here are the measurements of the jars and their charges as received:

	No. 1	No. 2
Volume of jar when empty, in liters	12.4	16.0
Number of stones	218	257
Weight of stones in kilos	11.18	11.09
Volume of voids with stones in jars, in liters	7.08	11.73

It is quite possible that one of these jars might cause knots while no such trouble would be developed by the other and it is almost an absolute certainty that they would give very different strength tests. This point was mentioned when the method of testing was first proposed but it is suspected that in some cases the jars have not been tested to see whether they give the same results, and it is desired to emphasize strongly the fact that if two jars are used their proper charges must be determined by experiment if the same results are to be obtained from each.

In beating for different lengths of time Hatch finds that in most cases the strength decreases after forty minutes treatment and he attributes this to the disin-

tegration of the fibres which takes place to such an extent that their ultimate strength is decreased and a lower test results. This appears to be a perfectly sound theory but attention is called to the fact that it is possible to make a sheet with a very high bursting strength without any appreciable amount of fibre being present. This has been done repeatedly with the pith from corn stalks, which, without any beating whatever, gives a parchment-like or horny sheet showing a very high shrinkage and great bursting strength. Here the ultimate strength of the fibres does not enter into the question and the cementing action of the thin-walled cells is practically the only strength giving factor.

In the paper under discussion the strength tests were based on sheets made on the hand mould, air-dried and then cut to a standard size for weighing. The weight is then apparently used to calculate the results over to an equal weight basis. This method is reliable when the stock to be made into sheets is "free," for under these conditions nearly the same amount of fibre will be retained on the mould each time. If, however, the stock has become "greasy" or "slow" because of long beating the fibres first collecting on the mould form a more or less impermeable layer and the rest of the fibres slide over the edges as the mould is raised through the stock in the vat. This results in progressively thinner sheets as the beating of the stock proceeds. To obviate this difficulty it is desirable—one might almost say imperative—to make the sheets in some form of apparatus into which a standard volume of the diluted stock is poured and which will retain all the fibre no matter what its beaten condition. Sheets made in such a way will more nearly approach actual paper making conditions than will those from the hand mould and the strength tests resulting will be quite different from those calculated to an equal weight basis from hand mould sheets.

Demonstration of this point is given in the following table. The same fibre was beaten and made into sheets on the hand mould and in a sheet machine which gave a constant weight of sheet.

Hand Mould Sheets			Constant Weight Sheets			
Hours Beating	Wt. of 4 Sheets	Bursting Strength	Burst. Str. $\times 10$ Wt. 4 sheets	Wt. of 10 Sheets	Bursting Strength	Burst. Str. $\times 10$ Wt. 10 sheets
0	17.00	23.7	13.9	10.05	11.2	11.1
1	14.90	46.5	31.2	10.91	38.1	34.9
2	.....	51.1	.....	10.46	56.8	54.3
4	10.80	61.5	56.9	9.63	82.6	85.9
6	9.35	55.8	59.7	10.06	93.5	93.0
8	7.65	40.0	52.3	10.48	104.9	100.0

In this case the maximum strength when hand mould sheets are made would be considered as reached at four hours if the bursting strength only were considered, or at six hours if calculated to a constant weight basis. On the other hand the sheets made to constant weight were still increasing in strength at the end of eight hours, and increasing to such an extent as to prove that the maximum strength was still far from reached. This illustrates the error in calculating the strength to a constant weight basis and proves that the strength-weight factor is not a constant.

Considering Hatch's results in the light of these

facts it seems probable that his maximum strengths are too low and that they are reached too early in point of time. A revision of his results on the basis of constant weight sheets would perhaps explain some of his variable results.

It is greatly to be hoped that these few remarks will encourage others to contribute their experiences for it is certain that the test could be made much more valuable if smaller differences in the results could be depended upon with more certainty to indicate actual differences in the fibres being tested, and it is equally certain that the combined experiences of all will enable progress to be made more rapidly than by the efforts of any single investigator.

Editor's Note.

In reading over this excellent article by Mr. Sutermeister we have been carried back in memory a couple of years to the pleasant experience we had in assisting and carrying out the experiments referred to. Mr. Sutermeister's article not only brings out considerable information of direct value but suggests a number of lines that might be viewed with profit by the investigators of the process of beating. For an operation so absolutely essential in the making of paper it has received little enough attention in the research laboratory.

The divergence of results indicates the possibility of fundamental differences at two points, first, the character of the individual fibre, and second, a difference in treating because of unrecognized effects of neglected factors in the apparatus or manner of handling. It has already been suggested by R. S. Hatch that in steam or air drying the wood fibre it is so changed that paper made therefrom has less strength than that made from pulp that is used in its original moist condition. It would seem that an important field for research lies in the further investigation of this point, since a large proportion of pulp must continue to be made and shipped in the dry condition. The pulp used by Mr. Mansfield and myself had been passed over a drying machine so that it had been subjected to the high temperatures which are said to have an injurious effect on the fibre.

In the making of the sheets with the hand mold it will readily be seen that if one should start with 500 grams of fibre, 10 liters of water and dip out a number of sheets, allowing the water to drain back into the container; it is obvious that the stock becomes diluted. As more sheets are taken out, the mold, while containing a constant volume, will pick up a constantly decreasing weight of fibre and the sheets must in consequence become thinner. The point made that a constant quantity of fibre should be used for each sheet is therefore one that should be uniformly observed. There is sometimes a little difficulty in getting a sheet of uniform thickness because of a whirling motion or other agitation of the stock in the hand mold. With the use of a sheet machine and the observance of proper care it is possible to get very satisfactory results. It seems desirable that investigators of this and other problems arrive at some agreement as to uniform procedure in making investigations where it will be desired to compare results. It is certainly to be hoped that further work will be done on this problem, and that the results of work already done will be published and frankly discussed by those interested in this important operation in paper manufacture.

Publishers Explain Appeal to Paper Tribunal

Written Specially for The Pulp and Paper Magazine,
By EVERETT ANDREW.

After a three day session last week, during which a great amount of argument was put forth on behalf of Canadian newspaper publishers by Mr. W. N. Tilley, K.C., the Paper Control Tribunal resumed in session at Ottawa on Monday this week.

The result of last week's session cannot in any way be gauged, as the judges gave no expression of opinion and counsel for the manufacturers had not even commenced their argument. If one fact could be considered more important than another to a lay mind the net result was that the whole history of the production of newsprint paper in Canada was being searched from cellar to garret.

Nothing apparently has been overlooked by the newspaper publishers.

For instance, instead of the price being \$69 per ton, the publishers argue fifty dollars per ton and in some cases less is sufficient to allow the manufacturers, and this at an operating profit. The main case and position of the newspapers as put forward last week, was that of a continual deduction from the price which was set by Mr. Pringle, the Paper Controller.

According to the brief of the Newspaper Publishers which was generally followed very closely by Mr. Tilley the costs of production, after allowing the deductions the newspapers claim should be allowed were as follows: Booth, \$36.43; Price Bros., \$39.26; Donnacona, \$39.60; Laurentide, \$37.04.

Mr. Tilley began his argument on behalf of the newspapers on Wednesday morning, January 8th, and after the week end adjournment resumed it on Monday.

A report of last week's proceedings is as follows:

On the opening of the session, Wednesday morning, Mr. Tilley, K.C., was first given the opportunity of presenting the case for the newspaper publishers. After prefacing his remarks to the judges in the general way he said he desired to trace in review the history of the newsprint case. This review lasted all day Wednesday.

Mr. Tilley said that the object of his presence before the court was to appeal on behalf of the newspapers against the \$69 price the Controller, Robert A. Pringle, K.C., had set in September last. The publishers suggested that instead of \$69 per ton as set that \$50 per ton should be the sale price in Canada and went on to point out that even at this lower figure it would give even the higher cost mills a slightly larger profit than they had been accustomed to prior to the Pringle investigation. What happened to bring about the investigation according to Mr. Tilley was this: When the representations of the newspapers was made to the Government they went to the Department of Finance. An individual, Mr. Breadner by name, had charge of them. After he had, so Mr. Tilley said, "gone into them," a letter was written and was signed by Sir Thomas White. Mr. Tilley started in to read the letter. Mr. Montgomery immediately objected claiming that it had not been filed, and was not in the evidence and was not in the brief. Mr. Tilley went on to explain that the contents of the letter

was similar to that which had gone to Mr. Cahoon.

Sometime in February, 1917, two orders-in-council were drafted in connection with the newsprint industry but for some reason or other that was not explained before the Tribunal were never published in the official way in the Canada Gazette. One of them related to the then Minister of Customs having power to set the price for newsprint paper. On April 16th of the same year two more orders-in-council were put through. Finally, according to Mr. Tilley's tracing, the manufacturers agreed to accept \$50 per ton for a period of three months.

When the investigation did begin, Mr. Tilley explained to the judges what his position had been at that time. He believed that it was right and proper that an inquiry should be conducted into all matters in connection with the newsprint situation, and anything that could throw light on it should be brought out.

"As I understand it the Government wanted light and said we will get Mr. Pringle to inquire and get the information for us," asked Justice Middleton.

Mr. Tilley agreed that it was then the business of Mr. Pringle to get the information and pass it on to the Government, but that it did not rest with him then to say what the price should be. Mr. Tilley went on in this vein to justify the appearance of the newspapers when they asked the sub-committee of the Cabinet to stay its hand before a price was fixed last February on the ground that the inquiry had not been thorough or complete.

Said Costs Were Padded.—Mr. Tilley's somewhat lengthy remarks suggested briefly this: When mills made their own pulp, they were charged a price they could have got if they sold it to somebody else. It was not cost. Thus it seemed Mr. Tilley's idea was that before the materials were turned out as paper two intermediate profits could be made. When paper was made the whole was charged up to paper. What Mr. Tilley said he was concerned in was the cost of newsprint. "I do not propose to accept as costs an averaged figure or cost increased by \$17.21 per ton, by these wayside profits," said he.

"When we withdrew from the investigation we were told that Mr. Pringle was not a price fixer." Further tracing of the attitude taken by the publishers when they withdrew from the investigation was gone into. Mr. Tilley told how he had attempted to investigate at that time the affairs and activities of the George H. Mead Co., and mentioned the incident of the Canadian Export Paper Co.

Touching on the matter of slush or lapped ground-wood being used Mr. Tilley said: "We (the newspapers) are prepared to pay the cost where lapped ground-wood is used for our paper, but what we do object to is the averaging of slush and lapped product all being dumped in together."

Another thing that the newspapers objected to was the principle of averaging rotogravure, half tone news, and newsprint together. Another point of complaint

was the system followed and the allowance made for depreciation. Three per cent, Mr. Tilley believed, was ample for any of the mills to write off for this charge. The distribution of the overhead charges of some mills did not suit the publishers at all. The case of Price Bros. was cited in particular.

Calls Booth Mill Inefficient. Mr. Tilley went on at considerable length to cite other objections that the newspapers had to find with the "costs" as accepted by Mr. Pringle from the reports prepared by Mr. Clarkson, that there were items included that were not true costs. Stumpage, depreciation and the numerous other elements and items he said, he would argue and touch upon later. He had mentioned them at the outset in an effort to show what he proposed to do. The position of John R. Booth was taken up as an instance, and the arguments and points raised by the publishers are best reflected by the following verbatim extract from their brief.

"Excluding for the present the Fort Frances Company, for which a special price was fixed by the Commissioner, the highest cost mill of those covered by Mr. Clarkson's second investigation is the Booth mill. This company's newsprint mill was built in 1906. It is at a great distance from its wood supply, has no switching facilities, has the old system of knife barkers and in these and other respects it is not a mill of high efficiency."

The Commissioner finds that this Company's average cost for the first six months of 1918 was \$55.70. This includes Government dues, in addition to the \$2 stumpage allowance. The average taken by the Commissioner is an average of the costs of the various months; on the basis of production this company's average cost would be reduced by 29 cents. And if the allowance for stumpage is reduced to the amount actually paid, the average cost would be reduced by \$2.42.

Following the practice adopted by Mr. Clarkson as to other companies, which was the same practice as was adopted by the accountants in the proceedings before the Federal Trade Commission, the pulpwood on hand Dec. 31st, 1917, should be charged to manufacturing costs in the order in which the wood was cut, after allowance for the customary 7,000 cords of pulpwood annually for spruce lumber. This means this company's paper costs commencing May 1st, 1918, should be figured on the basis of 1914-15 wood costs until that season's cut is exhausted, about July, 1918; then at the 1915-16 wood costs until that season's cut is exhausted about July, 1918; then at the 1915-16 wood costs until that season's cut is exhausted, about October, 1918, and then at the 1916-17 wood cost until that season's cut is exhausted, which would be about January, 1919.

Mr. Thomas, of this company, stated in evidence that sulphur is bought by the long ton of 2,240 pounds. It appears from Mr. Clarkson's report that sulphur has been taken into costs as if purchased by the short ton of 2,000 lbs.

This company has a surplus production of groundwood and sulphite, which is transferred in lapped form, and the higher cost of this lapped groundwood and sulphite has been averaged with the lower cost of slush groundwood and sulphite used in paper production. They also average the costs of roll and sheet news. Mr. Thomas testified that the difference in cost to this company between roll and sheet news was \$12 per ton.

The amounts charged to newsprint costs for finishing materials include the cost of wrappers, but in arriving at the cost per ton the total cost has been divided by the weight of newsprint paper produced instead of by the weight of newsprint paper plus the wrappers.

The company's allowance for depreciation has been increased in 1918 because of the fact that it is based on an appraisal of their plan made as of February 1st, 1918, not as formerly upon the actual cash investment. This increases the depreciation allowance by \$1.52 per ton of newsprint. Both during 1918 and the two previous years this company charged depreciation at five per cent, on machinery and three per cent, on buildings. As already stated, the Publishers contend that a proper rate at which to figure depreciation is an average rate of three per cent, on both buildings and plant based on actual cash investment. If this basis were adopted there would be a deduction of \$1.88 per ton of paper.

This company's costs for 1918 include its contributions to the Patriotic Fund, Y.M.C.A., etc.

The average cost of this company, as arrived at by the Commissioner includes a selling expense amounting to \$1.30 per ton of paper. This company's sales of roll news to Canadian publishers are made without the intervention of any selling agent or jobber, so that any expense involved is already included in general expense. This commission should therefore be deducted from the cost of roll news sold to Canadian publishers.

The following is a summary of the deductions claimed in connection with this company.

Average cost for six months, 1918, as found by the Commissioner	\$55.70
1—To arrive at average on a basis of production	\$.29
2—Stumpage over amount actually disbursed	2.42
3—Use of 1914-15 wood during May & June 1918	3.21
4—To correct error in figuring quantity of sulphur bought by long ton . . . . .	.09
5—To correct average of slush and lapped groundwood and sulphite	1.80
6—To correct averaging of sheet and roll news	2.40
7—To correct error re wrappers	1.95
8—Excessive depreciation allowance	1.88
9—Contributions to patriotic fund, etc. . . . .	.27
10—Commission charged as selling expense	1.30
	<hr/>
	\$15.61

Reduce average cost to \$40.09

From the above amount there should be a further deduction because of the figure arrived at by the Commissioner is an average of 4 high cost winter months with two low cost months. During the winter railed wood is used as compared with lower cost river wood in the other 8 months of the year; the production is less, increasing the cost; expenditure for fuel and power is greater; and there is less surplus production of groundwood and sulphite. If one of the winter months is averaged, with the two months of May and June, which would be in the proportion of 4 to 8 during the year, there would be a further deduction of approximately \$3.65, making the proper

average on which to base price \$36.44.

Continuing Mr. Tilley went on to relate that no properly conducted business provided all its own working capital.

Mr. Justice Middleton asked if any provision for a sinking fund had been allowed.

"They (the manufacturers) have everything except the church collection," said Mr. Tilley.

"And has there been any allowance in the case of a company which spends, says \$100,000 on dams to get its logs down, and after a number of years the logs are all down and the dam is no good?" asked Mr. Middleton.

"You cannot find anything the manufacturers have not thought of and included in their costs," replied Mr. Tilley.

The Cupboard Was Bare. On Wednesday afternoon Mr. Tilley referred to the position Mr. Booth had taken when he had refused last August or early September to supply newsprint paper in Canada. "When Mr. Pringle went to commandeer the paper he found there was no paper. It was not feasible to operate the mill," said Mr. Tilley. "Thus Mr. Pringle had to set a price whether he wanted to or not and without adequate investigation."

Not Time for Consideration. Mr. Tilley gave a long story of complaint regarding the short space of time the publishers had been afforded after the completion of Mr. Clarkson's second report, and the period in which the Pringle investigation was hurriedly brought on in September. "We were told that a price was absolutely going to be fixed before October 1st. This price was fixed and we are now appealing against it."

Taking up the second series of the Clarkson reports Mr. Tilley said the manufacturers had argued they were a continuation of the earlier reports and that the only difference between the two was that they covered different periods. If this was the case, argued Mr. Tilley, it would mean that the Government's intention in passing the order, February 18th, 1918, had been disregarded. This order he claimed made it clear that in the opinion of the Government some further investigation was required than that which had been made.

Counsel for the newspapers quoted figures showing manufacturing costs for the four sample mills as shown by the two reports of Mr. Clarkson. They include \$2 stumpage instead of Government dues on wood. The second series runs from \$1.40 to \$16.73 less per ton than the first, except in the case of Donnacona whose costs were all higher in the second report.

Mr. Tilley referred to the appointment of Mr. J. L. McNichol and his visit to the paper mills working in conjunction with Mr. Clarkson.

Mr. Tilley said they had requested the appointment of an expert not to give opinions but for the purpose of finding out "loopholes" in the costs of the paper manufacturers' business. In short, the expert was supposed to tell them about the ins and outs of the manufacturers' business, how they conducted it and what was a right or proper charge and what was wrong.

Referring again to Mr. Booth, Mr. Tilley said: "There should be some way that would make Mr. Booth and others obey the law."

The publishers, he said, did not object to such charges as rentals, Crown dues and fire protection on

limits being charged as costs. He referred to the prospectus or annual report of Price Bros. attempting to prove by it that cutting was carried on in such a manner that the woodland tracts were not depleted, Rainfall, efficient fire protection, the granting of concessions, etc., were gone into at considerable length. The history of the acquiring of limits and tracts by the Abitibi Paper and Pulp Company were gone into. In this connection Mr. Tilley read from the publishers brief as follows:

"To allow the Abitibi Company to include in its costs an allowance of \$12 per cord for stumpage that costs only forty-five cents per cord, including proportion of annual rental, would be to permit that company to capitalize at from \$12,400,000 to \$15,000,000 woodlands that do not represent one dollar of actual investment. As a matter of fact the annual increment on the Abitibi Company's limits through natural growth even taken at the lowest figure suggested by any expert of forest growth would be greatly in excess of the number of cords actually cut annually by the company."

Mr. Justice Middleton wanted to know if the position of such companies who received woodland and timber tracts was not similar to that of the land grants given the C. P. R. "The land in the west was presumed worthless unless a railroad went there," said Mr. Middleton.

Depreciation Not Appreciated. On Thursday morning Mr. Tilley, among other things, took up the subject of depreciation. The amount of \$3.20 per ton allowed for this charge by the Federal Trade Commission he said had been the result of what accountants had agreed upon. He did not think there was anything to show how it had really been arrived at. He was in agreement with the principle of depreciation unless there was a charge for repairs and betterments. Mr. Justice Archer pointed out that the evidence showed that some of the companies could not afford to allow for the charge of depreciation.

Mr. Montgomery objected to Mr. Tilley's use of material that was not in the record.

Mr. Tilley said that he was not contending that the companies had not been charging for depreciation since the Pringle inquiry began, but he was arguing that some companies had not been doing so before. He claimed the practice of building up or assuming a cost system since the beginning of the inquiry was not the right way to look at it. What should have been done, or what he thought was the right way to arrive at the costs was to have the manufacturers first prove their costs and then if there had been increases prove the increases.

"Let them (the manufacturers) show how the costs increased from \$35 to \$69. They can't do it," said Mr. Tilley.

Later on Mr. Tilley brought in or quoted from a certain report dated June 13th, 1917, in connection with the investigation before the Federal Trade Commission, Mr. Montgomery and Mr. Henderson objected to it, claiming that it was misleading and that it had not been accepted or adopted by the Circuit Judges.

"Commissioner Pringle assumed it was adopted. I say it was never judicially adopted from beginning to end. The Federal Trade Commission never adopted it," said Mr. Montgomery.

Counsel for the manufacturers also drew attention to the operations of the accountants for the Federal

Trade Commission when they visited the Laurentide mill. After the accountants had been left absolutely alone in the school room with the books of the company they left with whatever information they had got and had not given the Laurentide officials any opportunity to explain any of the items or costs that the books showed. Repeated requests to the Federal Trade Commission by Mr. George Cahoon and others had failed to find out the basis on which the accountants had made up the charges for the Laurentide mill.

The judges finally ruled that the annual reports of Price Bros. and the pamphlet of the Federal Trade Commission would not be received as evidence. The decision put a stop to Mr. Tilley's attempt of bringing in what was not included on the original record.

Mr. Tilley went back to depreciation in connection with the Donnacona Company in which the record showed that this company had not charged up depreciation.

Later he referred to the appraisal that had been made at the John R. Booth Company, the plant being written up from \$1,600,000 to \$3,300,000 when the appraisal was made. He spoke at considerable length on how the allowance for depreciation by the appraisers worked out.

Sinkage.—Sinkage was gone into Thursday afternoon. In reference to the Booth system as reflected by the reports, Mr. Tilley said it was probably sufficient for Mr. Booth's needs.

On the question of woods charges with the Booth Company, Mr. Tilley claimed that the 1914-15 costs should be carried on, and the wood produced in that year be first used, and taken into account. Mr. Tilley read tables of figures for wood costs in connection with groundwood and sulphite.

In the 1916-17 season, so Mr. Tilley said, John R. Booth had 41,261 cords of wood on hand. In the 1915-16 season he had 38,286 cords. In this connection Justice Areher said: "You will see Mr. Booth does not want to get caught with high priced wood." Mr. Tilley maintained that had Mr. Booth used the 1916-17 wood in 1918 the saving for two months as spread over the six months' period would have resulted in the reduction of the cost of \$3.21 per ton of paper. He maintained that if Mr. Booth was economically conducting his business with a view of keeping his costs down as low as possible, that he would not go about picking out the high priced wood.

Counsel for the newspapers maintained that Mr. Booth used knives for barking, which he considered an old method, and wasteful to the extent of 25 per cent., whereas had he used the newer method of barking drums the waste would have only been ten per cent.

Mr. Henderson, in this connection, said something about the film showing the manufacture of paper the Judges had seen the night before, supposing that the International Paper Company, if it used knives for barking would not be considered an efficient mill. "You can suppose anything you like," said Mr. Tilley. "You could suppose also that those hardworking men we saw in the picture were the shareholders." A general laugh went round at this sally.

Mr. Tilley again made reference to John R. Booth charging up the Patriotic Fund and Y.M.C.A. contributions as elements of cost. Mr. Henderson immediately took objection to this method of procedure, and wanted to know if Mr. Tilley was really serious in the

matter. Deductions such as Mr. Tilley saw them were gone into. Booth's costs, after the deductions, would be cut to \$40.09. Price Bros. to \$39.26, Laurentide to \$37.04, and Donnacona to \$39.60.

Fort Frances came under fire Friday morning. Its costs of manufacture for the first six months of 1918 were gone into. For the months as recited by Mr. Tilley they were: Jan., \$64.08; Feb., \$62.89; March, \$61.83, April, \$62.89; May, \$62.26; June, \$66.96. The evidence Mr. Tilley said showed that the company had used purchased groundwood till July. In July the company used some purchased groundwood, and some they manufactured themselves. In July he said the cost was only \$57.92. Freight rates on groundwood added \$3.50 per ton. The drawback on the duty for sulphite was touched upon. For the three months of 1918 for the Canadian company, Mr. Tilley said the report showed an average cost of \$59.77 per ton, and for the same period for the combined companies in the American investigation it was shown the cost was \$53.16, or \$6.61 less.

There were three main reasons for this according to the publishers' counsel. They were: 1st, a different method of wood costs, 2nd, a different system for allowance for depreciation; 3rd, an unequal use of power, as between the American and Canadian companies, i.e., the Minnesota and Ontario Power Company on the one hand, and Fort Frances on the other.

Mr. Tilley contended that because of the diversion of power from the Canadian side to the American that the Fort Frances Company had been compelled to purchase groundwood, whereas if the power had not been diverted it could have manufactured its own groundwood at a lessened cost. He maintained that the diversion of power was not in accordance with the statutes and quoted from both Provincial and Federal Acts which had been passed in connection with the Minnesota Company. Mr. MacLaren's evidence before the Controller was gone into. Production figures were cited and compared. Mr. Tilley claimed that during the non-operation of the groundwood mill that the publishers had had to pay or bear indirectly the cost of the idle mill. He referred to the long distances (Iroquois Falls, Ont., and Buckingham, Que.), the Fort Frances Co. had gone to secure its groundwood. He disagreed that Fort Frances should be treated differently from any other mill, and the extra allowance, making its prices \$73 per ton, instead of \$69, had not been sustained by evidence.

Depreciation with this mill was also gone into, and an almost bewildering mass of figures submitted.

Return on investment, capitalization, etc., were all gone into very exhaustively, finally the deductions claimed by the publishers being as follows:

Average cost for 5 months, 1918, as found by	
Mr. Pringle	\$62.79
1st—On purchased groundwood	\$13.17
2nd—Charges for idle plant . . . . .	.52
3rd—Cost of re-slushing	3.00
For excessive depreciation allowance.	2.87
	19.56
Reduces average cost to	\$43.23

Capitalization on the proportion of so much per ton on a daily tonnage basis was referred to. On a capitalization of \$39,500 per ton, with a return of 15 per cent. the profit would be \$19.75 per ton, as allowed in

the United States, and on the figure of \$35,000 per acre as assumed by Mr. Procter with the same rate of return \$17.50 per acre in Canada.

As to making a allowance for going value, Mr. Tilley said this charge was supposed to run up the manufacturers for lean years, or, putting it another way, the capitalization of early losses.

Mr. Tilley continued on capitalization on Friday afternoon. He referred to Mr. Charles Schwab's policy, fifty cents to shareholder and fifty cents to plant. As regarding depreciation Mr. Tilley claimed it would not work out this way, as the fifty cent. allowance to the plant was fifty cents of the shareholders' money and profit. Depreciation, he claimed, was charged up first before any profit was declared. Laurentide was cited as an example. Its capitalization, reorganization, accumulated surplus, apportionment of profit to shareholders, the apportionment of two shares in the new company for one of old at par, etc., were most exhaustively gone into.

The whole afternoon was really devoted to Mr. Tilley's explanation of cause and effect of matters pertaining to high finance, as applied to Canadian paper mills.

To any student of finance the address was highly illuminative. In fact it was a very interesting address to listen to. To attempt to explain the different phases of it would take pages of any printed magazine, and then perhaps much might be left unsaid or unexplained.

Finally, after his long explanation of things and conditions affected by and pertaining to finance and capitalization, Mr. Tilley got down to the idea that \$8,000 on a daily tonnage basis was ample capitalization on which to run a paper mill.

Court adjourned till Monday morning, when Mr. Tilley finished his argument and Mr. Montgomery replied for the manufacturers. Mr. Montgomery's argument will be reported in the next issue of The Pulp and Paper Magazine by our special correspondent at the hearing before the Paper Control Tribunal.

MAKING FILTER PAPER.

Actual production is to start soon at the mills of the Eau Claire Paper Manufacturing Company, recently established near Eau Claire, Wis. Work has been going on at the plant in a slow way for several months. Difficulty in obtaining and needed machinery, and trouble encountered in getting certain raw materials, however, greatly handicapped the early output. The concern is headed by William Brubacher, formerly chemist with the Dells Pulp and Paper Company. A filter paper used in chemistry is the principal product. So far as is known, Mr. Brubacher's plant is the only one in the United States producing this material.

PAPER MACHINERY MAKER DIES.

Julius E. Waterous, one of the founders of what is now the Waterous Engine Works, at Brantford, one of that city's largest industrial plants, died Saturday at his home at the age of 83 years. He was connected with that concern as a mechanical manager until he organized the Waterous Engine Works, which he conducted till he retired in 1910. The Waterous Engine Works is known for its pulp and paper mill in Canada and many friends will be sorry to hear that Mr. Waterous has gone.

WHERE ENGLAND GETS PULP AND PAPER.

A feature of the Board of Trade Returns for November is the resumption of the publication of the countries whence England draws her imports. The total imports of paper, etc., last month were 120,409 cwts., and for the eleven months ended November 1,950,174 cwts., decreases of 25,187 cwts. and 623,690 cwts., respectively, compared with the corresponding periods of last year. During January-November of the present year we received 257,681 cwts. of reel-paper, the principal supplies coming from Sweden, viz., 119,439 cwts., followed by Norway with 96,261 cwts., with a contribution of 35,387 cwts. from the United States, and a small lot of 4,820 cwts. from Newfoundland. Of 181,172 cwts. of printings or writings not on reels imported during the eleven months Norway supplied 73 per cent., other receipts being chiefly from Sweden (34,655 cwts.), and the United States (11,106 cwts.). No hangings were imported, and of the 9,993 cwts. of other printed or coated paper received, the supplies from France and the United States were comparatively small. In packing and wrappings, Norway supplied 410,838 cwts. and Sweden 198,139 cwts. out of a total importation into the United Kingdom of 640,740 cwts. The total value of paper imports in November was £276,425, within £66 of the amount for the corresponding month of last year; for the eleven months ended November the value stands at £4,727,347, an increase of £965,369, compared with a year ago.

And Canada is not even mentioned.

The same is true on the report on chemical and mechanical pulp. There must be something wrong when England gives us the go-by.

REMOVAL OF DUTY WOULD BOOST SULPHITE ALCOHOL.

That the possibilities for economically converting sulphite waste liquor into industrial alcohol are still being considered is shown by the opinions of the Advisory Council on Scientific and Industrial Research. The first step toward success is the removal of duty restrictions on alcohol for industrial purposes.

"I have no doubt that the world is going to recognize that industrial alcohol can no longer be produced from foodstuff," stated Dr. R. F. Ruttan, Chairman of the Advisory Council. "I believe the time is at hand when any sort of food will be used as such, and not converted into alcohol. Our other sources of alcohol, viz., sulphite liquor waste and our waste wood, can produce all the ethyl alcohol used in Canada. Two pulp mills alone in Canada promise to produce 680,000 gallons of alcohol per year, and the industrial alcohol used in Canada before the war was less than 1,000,000 gallons. From the wood waste we can obtain a spirit which is purer than that which is obtained from grain. Aldehydes are the only impurities in alcohol from wood, and, as we know, much more easily got rid of than the impurities in grain spirit."

It is estimated that industrial alcohol can be manufactured from waste sulphite liquors of pulp mills in Canada at a cost of not more than 40c. a gallon. Production of sulphite pulp in Canada amounts to over 1,000 tons a day, and it is increasing steadily. The total amount of sulphite liquor is over 2,000,000 gallons a day. The alcohol value by fermenting amounts to 7 p.e. by volume of the liquor actually recoverable.

Making Men Like their Jobs

(Continued from Page 27.)

Giving Men a Greater Chance to Express Themselves.

Industrial organization, when consciously patterned after the organization of the human body, is bound to cease repressing the life principle in the individual workmen, for bodily organization in man does not repress the development of the individual cells or the development of the individual organs, but works consciously to give them a greater chance to express life.

To continue the analogy between the organization in man, and the industrial organization created by man, I would like to call attention to the fact that man's body is made up:

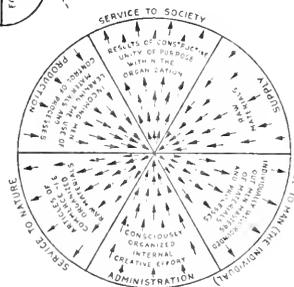
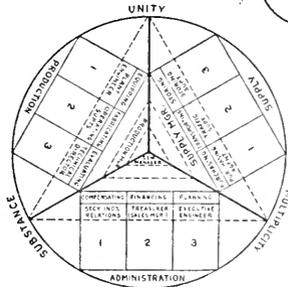
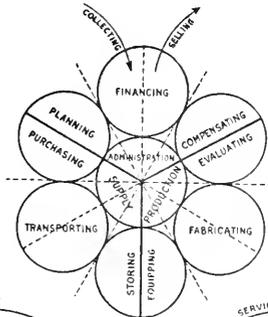
First, of substance which functions according to exact natural law. This law must be obeyed if the individual is to express the greatest possible amount of life and vitality;

Second, bodily organs and structures which exhibit certain definite characteristics, these organs, of course, being created out of that material substance of which the body is composed; each organ, however, takes on individual characteristics, depending upon the function that it has to perform. This aspect of the body we might call the aspect of multiplicity, and the more highly organized is the body the greater the power of expression of the individual;

Third, the unity principle which uses the nervous system as its great channel of expression; bringing all parts of organized man into intimate and close relationships, associating and co-ordinating the parts with the spirit of the whole, restraining and accelerating all functions so that perfect equilibrium and balance may be maintained between inner and outer stimuli or impressions. Every man knows that he is One. It is not an accident that both the letter "I" and the figure "1" are expressed by the same symbol, and the foregoing is merely a way of defining in physiological and psychological terms what everyone knows to be a fact. It is only when the nervous system is diseased, and therefore unable to keep proper balance between the various individualized bodily activities, that we are conscious of the lack of oneness or unity.

From this we see that every individual centre of life expresses itself in three aspects: the aspect of unity, the aspect of multiplicity (individual interior organization), and the aspect of substance, which modern science to-day is disclosing to be a universal form of activity. To illustrate what I mean, I will quote from an article on "Periodic Law"—the law which indicates that all chemical elements are created from one primordial substance. This quotation is taken from the "General Electric Review," and is written by Dr. Saul Dushman of their research laboratory.

"Considering the relationships exhibited by the different radio-active elements, one realizes that the dream of the alchemists may not have been as fatuous as has appeared until recently. The concept of an absolutely stable atom must be



DIVISION	GENERAL FUNCTIONS			
Administrational	Compensating	Employment	Compensation	Service
"	2 Financing	General Accounts	Sales	Collections
"	3 Planning	Budgets	Plans & Estimates	Ways & Means
Supply	1 Purchasing	Crude Materials	Sundry Supplies	Apparatus
"	2 Transporting	" "	" "	" "
"	3 Storing	" "	" "	" "
Production	1 Equipping	Constr. & Maintenance of buildings	Constr. & Maintenance of equipment	Constr. & Maintenance of power plants
"	2 Fabricating	Preparation of raw materials	Fabrication of prepared materials	Finishing of product
"	3 Evaluating	Progress records	Research and investigation	Planning for improved equipmt

(1) These headings naturally can be modified to meet local conditions, and different types of industries. The purpose is to illustrate principles only.

(2) In a small plant, for sake of economy, several functions can be combined under one man.

(3) In the central organization of a large corporation made up of a number of plants, the activities are largely functional. In the individual plant they are administrative.

This chart—the circles, lines, and arrows of which you may at first glance think rather complicated—indicates graphically the principles underlying Mr. Wolf's philosophy of work. In his article he tells how he applies these principles.

discarded once for all, and its place is taken by this miniature solar system, as it were, consisting of a central nucleus and one or more rings of electrons.

"But the nucleus itself is apparently the seat of immense forces, and in spite of its exceedingly infinitesimal dimensions it contains both alpha particles and electrons. Once in a while the nucleus of one of the atoms will spontaneously disintegrate and expel an alpha or beta particle.

"A new element has been born. What causes these transformations? Can they be controlled? These are questions which only the future can answer. But if we had it in our power to remove two alpha particles from the atom of bismuth or any of its isotopes, not only would the dream of the alchemists be realized, but man would be in possession of such intensely powerful sources of energy that all of our coal mines, waterpowers, and explosives would become insignificant by comparison."

Put in less technical terms, this means that modern science has discovered that there is no dead or inert substance, but that the form and character taken by the various chemical elements is caused by their particular type of internal activity. Logically, when this manifestation of life stops, the atom ceases to exist. The internal character or vitality of the atom (or molecule, depends upon its rate of vibration; its form upon the direction of this vibration, that is the axes of growth and its bulk or outer form upon the extreme limits of these vibration paths.

Now let us turn to our industrial organization to see how this analogy must hold in order to obtain a high degree of creative power within the organization. The chart on another page is a convenient way of expressing the principles of unity, multiplicity, and substance. It will be noted that unity corresponds with the function of administration, multiplicity with production, and substance with supply.

Supply is naturally made up of three functions; purchasing, transporting, and storing.

Production: Of equipping which has to do with plant design and naturally is more or less concentric with storing; fabricating, which has to do with the organization of the individual parts; i. e., finished or partly prepared materials and evaluating, which has to do with the recording of individual operations with reference to quality, quantity and economy of performance, assembling these for the purpose of research and investigation; and then giving unity and vitality to the productive process by providing means for the creation and design of more suitable operating equipment, thus completing the productive function that the plant is organized to perform.

Administration is made up of compensating, which has to do not only with employment and service, but also with the establishment of proper industrial relations within the organization from the point of view of reward for services rendered, in other words, the democratic carrying out of the law of compensation within the organization.

Financing has to do with the organization's relationship to its environment, or the general market, and therefore the assembly of all data for the finished cost statement of output; the disposal of the finished product at proper market prices, and the final collection of all the money due the organization for the services that are being rendered. It is distinctly a unity function in the administrative branch

of the organization. Planning is the third administrative function and has to do with the determining of ways and means for the proper disposition of the incoming financial returns for services rendered.

How These Laws Are Put to Work.

To record the laws in such a way that they are quickly available for use, the evaluation department uses graphical charts. In the production divisions the graphical department is the memory and corresponds to the cerebral part of the nervous system. Of course the production progress records which are given to men and groups of men throughout the plant are the means of releasing intelligent thought wherever a particular operation is performed. These records insure proper functioning without direction from the conscious mind of the organization, so correspond to the reflex action of the spinal-cord. The sympathetic system of the production division is the system of daily reminders not to forget to do certain things, which experience has taught us are necessary as a matter of routine. We call this our plant "ticker" system and through its means not only release creative power by relieving our department heads of the burden of remembering routine work, but insure against forgetting important operations which should be repeated at regular intervals.

Just as evaluating and compensating are more or less concentric functions, as they are the point of contact with the production and administrative divisions, so planning and purchasing are also concentric functions.

The stream of finished product, after proper evaluation, passes out through the selling side of the financing function, and the reward for the service rendered by the organization comes in on the collecting or receiving side, which contacts the planning sphere of the larger organization. Of course, by the operation of the law of cause and effect the greater the service rendered the greater the reward.

This is the basic law of life as it is known to all engineers and scientists. We call it the law of the conservation of energy on the material plane. The philosopher who deals with mental concepts calls it the law of compensation. No one can escape the working of this law.

The employer may pursue the short-sighted policy of preventing the employee from using his brains in his work, and thereby hold his compensation down to a low level, but he does not gain one single advantage by doing so. The result is simply to repress creative effort and, what is even worse, to deflect creative power into destructive channels.

Practically all the destructive forces at work in the industrial world to-day, which are manifesting in organized efforts to reduce production, are the results of this autocratic domination of the wills of the workmen by forcing them into an environment where free self-expression is an impossibility.

By destructive forces, I mean the sabotage methods exhibited by certain aspects of the I. W. W. and Bolshevik movements. We cannot repress the creative process in the individual; we can only deflect it into

Note.—I use the word evaluation because it is more comprehensive than "statistical"; it includes statistics but adds the implication of judgment based upon knowledge.

(Continued on page 66.)



UNITED STATES NOTES

The National Paper Products Company at Stockton, Cal., which began operations early in December with an initial force of 150 employees, is planning to take on one hundred more soon as the box-board department has been made ready for a start. Close to one million dollars has been put into the construction and equipment of the new plant. Eighty tons of board per day can easily be turned out when operations get in full swing. The supply of paper pulp required is at present being obtained from British Columbia. Waste paper in huge quantities is to be largely used as raw material.

With the sale of the Farmington River Power Company of the Rainbow Paper Mills at Rainbow, Connecticut, one of the oldest paper manufacturing plants in the Nutmeg State is due to be dismantled in the near future. In making the purchase, the power company secures one of the finest sites in Connecticut for the development of the water power. The mills at Rainbow have been in operation for more than fifty years—Mill No. 1 for a period of seventy-five years.

According to John W. Bockman, a member of the California section of the American Chemical Society, the consumers of Stockholm, Sweden, have been eating bread baked out of two-thirds wheat or other flour and one-third substitute flour made of spruce. Extensive experiments made to determine the digestibility of the spruce or cellulose flour, have proven that fully one-third of it is absorbed by the human system. The volume of this flour is about three times that of wheat. It has been selling in Stockholm at about 40 cents a pound.

Members of paper and allied houses have been asked to make a permanent exhibit at the Chicago Permanent Exhibition Building at State and Van Buren streets, Chicago. The enterprise is headed by Joseph Leiter. It is intended that all articles manufactured in Chicago appear on display there. Interest is being shown by some of the paper specialty houses.

A new circular saw-mill with a capacity of 20,000 board feet has just been started by the Forest Products Laboratory, of the U. S. Forest Service, at Madison, Wis. The mill is to be used mainly for the purpose of making obtainable for experimental and test needs certain materials which cannot be procured commercially.

The organization of the Kalamazoo Valley Paper Mills Cost Association was recently effected at Kalamazoo, the following organizations enrolling: Kalamazoo Paper Company; King Paper Company; Monarch Paper Company; Kalamazoo Vegetable Parchment Company; Hawthorne Paper Company; Standard Paper Company; all of Kalamazoo; Lee Paper Company; Vicksburg; Michigan Paper Company, Plainwell, and the Bardine Paper Company, Wolverine Paper Company and Otsego Coated Paper Company, Otsego. The association was formed to consider cost problems and to promote cost systems in all the valley mills. George T. Jubb, Kalamazoo Paper Co., is Presi-

dent. H. C. Bradford, King Paper Co., secretary, and P. L. Broesamle, Monarch Paper Co., treasurer.

The Ashland Power Company which recently obtained control of water power sites on the La Flambeau River near Ladysmith, Wisconsin, plans to begin the work of constructing a \$2,000,000 dam at this point in a few weeks. Two years may be required to build the proposed dam. The site selected is fourteen miles from Ladysmith. A structure half a mile long will be required to dam the river there. Power can be conveyed from this point to Ashton via Mellen, and can also be easily transmitted to Minneapolis and St. Paul and to the ports of Duluth and Superior.

The Safeack Mills of Philadelphia are now occupying their new headquarters in the recently remodeled building at 231 Chestnut street.

The Mohegan Wall Board and Roofing Corporation, with offices at 17 Battery Place, New York City, was incorporated at Albany, January 10, capitalized at \$60,000. The incorporators are O. M. Baxter, F. M. Peterson and A. J. Yosler, all of New York city.

Enemy-owned or controlled dye patents, estimated to be worth anywhere from \$50,000,000 to \$250,000,000, now held in trust by A. Mitchel Palmer, custodian of alien enemy property, are the cause of a great deal of concern to many American manufacturers and dealers, judging from the flood of applications for the use of these patents that are arriving in a steady volume at headquarters of the Federal Trade Commission in Washington. There seems to be widespread fear that these patents will revert to their owners after the treaty of peace has been signed. It is not at all unlikely that the settlement of this dyestuff matter may require legislation.

EXHIBIT OF PAPER TEXTILES AT NEW YORK CUSTOM HOUSE.

(Special to Pulp and Paper Magazine.)

New York, Jan. 13, 1919.—Paper textiles on display at the office of the Bureau of Foreign and Domestic Commerce at the Custom House in New York City show a wide range. The extent to which paper has been utilized as a substitute for various textiles in Europe during the war is surprising.

Great Britain's principal need has been bagging. A heavy standard sack made of the paper textile is shown. It has reinforced edges and is large enough to contain four bushels of grain. For military purposes a substitute material made of paper was being used for machine-gun belting, and a camouflage paper textile of flimsy green served various purposes.

Paper textile carpets comprising nine different patterns are also on display. This has a rather dull and unattractive finish and is much like matting in appearance. Specimens of wall coverings that are shown are mostly in dark colors. The paper textiles being well adapted to stencilling, the designs are quite artistic.

Technical Section

Of the Canadian Pulp and Paper Association

OFF FOR NORWAY.

Some of our technical men must be related to the noming pigeon. A few weeks ago Mr. S. Wang, chief chemist for the Riordon Company essayed a flight across the Atlantic to the homeland, and now Mr. Grindstadt, of the Pacific Mills, Ocean Falls, B.C., has spread his wings in the same direction. We imagine they will find conditions much different from what they last saw over there. Bon voyage!—both ways.

COAL IS KING: A MOVING PICTURE.

The subject of coal is a "moving" one in more ways than one. Pointers on waste and conservation "are shown in a most interesting way," by the film that will be used at the meeting of the Technical Section January 30th as a part of the program on "Power."

The picture film entitled "Coal is King" was produced by the Ford Motor Company from a scenario written by and under the direction of Robert June, M. E. This film deals with the conservation of coal and handles this situation in a complete and convincing manner. The story is directed to Presidents, General Managers, and Chief Engineers of Power Plants. It has no appeal to the small customer in the home.

The picture deals with good and bad methods of coal mining and transportation, also good and bad methods of firing, the use of power plant instruments, such as draft gauges, CO₂ recorders, etc.

The necessity for keeping the boiler surface clean is properly brought out. Pictures of scale and soot removal are shown, losses caused by firing the boiler too high or too low, above or below rating, losses caused by cutting in stand-by boilers too early or too late, losses caused by uncovered steam pipes, leaky pipes, steam traps, etc.

This picture, telling the story of coal from the time it is taken out of the ground until it is used in the generation of power, has received the endorsement of the State Fuel Administrators throughout the States. No small details have been omitted, and if the lessons taught are put into practice, millions of tons of coal will be saved the nation.

REVIEW OF RECENT LITERATURE

E-2. Motor fuel.—G. K. Gjerd, *Papir-Journalen*, Apr. 4, 1918, p. 42. Comparison between the advantages and disadvantages of various kinds of motor fuel, acetylene gas, gasoline, sulphite alcohol, etc. It is shown that sulphite alcohol is the best substitute for gasoline. To facilitate the starting up of the motor about twenty per cent. benzol or other suitable hydrocarbon should be added to the alcohol. Even coal oil can be added advantageously even if the coal oil and the alcohol do not combine completely.—G.Hg.

L-O. Cattle food from cellulose. *Svensk Papperstidning*, July 31, 1918, p. 321. S. Lindén and Professor H. Finkquist, Alnarp University for Agriculture, Sweden, have made experiments with feeding cellulose to pigs as a substitute for beets and flour. 1 food unit of cellulose is equal to 1 food unit of beets but is superior to flour.—G. Hg.

L-O. Cattle food from cellulose. Professor H. Isaacson, Aas, Norway, *Papir-Journalen*, July 25, 1918, p. 102. Results obtained by feeding cow and horse with

sulphite cellulose as a substitute for hay and oats. Figures are given from the various tests made and it is claimed that 1.6–2.13 kilogram cellulose with a moisture-content of 6 p.c. will equal 1 food unit, which is the same as 1.2 kilogram of oats. Cellulose treated in a Kollergang and given to the cattle in dry form is considered more easily digestible than cellulose torn to pieces by hand and left in water for 12-24 hours.—G. Hg.

L-O. Substitute for leather, cotton and hems in belts. *Tidsskrift för Papperindustri*, August 15, 1918, p. 248. The scarcity of materials before the war used as raw material for belts, as leather, cotton, hemp, balata, etc. has caused the Swedish Belting Co., Ltd., Örebro, Sweden, to put on the market belts made of paper yarn. Belts are made of this material in widths of from 50 to 1,000 millimeters and in lengths of 125 meters. Of special interest is a belt where steel wires are woven in between the paper yarn. Belts exposed to moisture are impregnated with coal-tar. The life of these belts is said to be 8-10 months.—G. Hg.

R-2. Professor Peter Klason. *Svensk Pappers-Tidning*, Apr. 15, 1918, p. 119. The well known chemist and sulphite expert, ex-professor of the Royal University of Stockholm, celebrated on the 4th. April, his seventieth birthday. The aged scientist although retired, has not given up active work but takes a lively interest in the country's work on food conservation, being a member of the government committee for utilization of cellulose as cattle food.—G. Hg.

R-4. Advisory Committee to assist the British paper controller. *Svensk Papperstidning*, July 13, 1918, p. 323. On request of the British paper controller the British Wood Pulp Association has appointed three persons to act in advisory capacity concerning import of pulp. Of these three persons, one, Mr. L. P. Andrews of Messrs. Andrews & Company, is supposed to be familiar with the Swedish market conditions, etc. Mr. George Buehanan of Messrs. Becker & Company, Limited, handles the Norwegian interests and Mr. Charles Greenhalgh of Messrs. Greenhalgh & Co. the Canadian interests.—G. Hg.

SOOT—THE GREAT ENEMY.

(Canadian Pulp & Paper Association Coal Saver No. 4.)

Soot, or lamp black, is one of the best insulators we have.

Some idea of this can be had if you remember that 1-5th of an inch of soot will stop as much heat from reaching boiler tubes as a layer of asbestos one inch thick.

Did you ever try and boil a kettle of water on a pad of asbestos one inch thick?

That is what is happening in your boiler if you don't remove the soot.

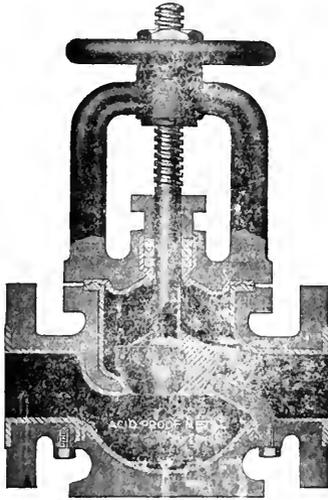
If you are running your boilers efficiently there will not be much soot, but what there is must be removed frequently, otherwise the intense heat will bake it on the tubes and dynamite will not shake it off.

Remember that if you allow your tubes to be coated with soot they might as well be covered with asbestos.

Coal costs money.

Don't waste it trying to heat sooty tubes.

ACID RESISTING PUMP VALVES



We wish to call your careful attention to our line of Acid resisting Pumps, Valves and Fittings, they are absolutely perfect in detail. In price comparison with Acid Resisting Bronze Valves etc. they make an enormous saving in your initial cost.

For lining Acid Tanks, Agitators, and Sulphite or Sulphate Vats, Hoyts Sheet Metal will give far better service than the ordinary Chemical Sheet Lead in the market. If you will write us stating conditions under which your Sheet Lead is operating, we would be pleased to go into the matter fully and will convince you of the economy of Hoyts Sheet Metal.

WRITE FOR CATALOGUE.

HOYT METAL COMPANY

FACTORIES: London, England. Toronto, Canada. St. Louis, Mo. New York, N. Y.

Eddy's Fire Pails Are Practically Everlasting

They are made of Indurated Fibreware under the Eddy process. Not being metal, of course, they cannot rust. They will not crack, warp, split or come apart. They will never leak. Having a round bottom they will not stand up, therefore they cannot be removed for ordinary pail purposes. They must remain hanging in their appointed place, ready for that fire which may start at any time.

You can secure Eddy's Fire Pails through any dealer — Ask to see them to-day.

THE E. B. EDDY CO., Limited.
HULL, CANADA

Makers of Canada's Famous Matches

PULP AND PAPER NEWS

A new Canadian publication is now being issued in London, Eng., and is the organ of the Khaki University, which is being attended by so many Canadian soldiers.

H. M. P. Eckardt, of Toronto, who was widely known as a financial writer and was the author of two well known books on banking, died last week at Muskoka after a long illness. He was forty-nine years of age and leaves a wife and mother. Many Canadian publishers will learn of his passing with great regret.

The engagement of Miss Alice Aitken, daughter of the late Robert Aitken, who was the first superintendent of the Canada Paper Co., Windsor Mills, Que., and Frank H. Matthews, of Toronto, is announced. The wedding will take place this month. Miss Aitken has been employed for some years in the office of the Canada Paper Co., at Windsor Mills.

Alfred Mellish died recently in Woodstock, Ont. He was an old time printer and was at one time publisher of the Independent newspaper which he founded at Comber, Ont. He was sixty-three years of age and was prominent in lodge and church circles.

M. J. Hutchinson, who is business manager of the Bulletin Publishing Co., of Edmonton, and a former well known Ontario newspaper man, is now District Governor of the Rotary Clubs of Western Canada.

A federal charter has been granted to the Standard Cabinet Co., Limited, of Montreal, with a capital stock of \$95,000. The company is authorized to acquire, lease, sell and deal in timber limits, and operate, develop and manufacture wood lumber, pulp wood, etc. Among the incorporators of the organization are Robert S. Weir, K.C., and Frank G. Dort, Montreal.

In the recent election in Thorold, Ont., for municipal officers for the coming year, Ed. P. Foley, of the Foley-Kieger Pulp and Paper Co., who has served several years in the council, was a candidate for the mayoralty in a three cornered contest. He was defeated by only 28 votes.

During the recent holiday period the Victoria Paper and Twine Co., Toronto, again paid to their employees a bonus of ten per cent on their wages of the year and the staff presented Charles V. Syrett, secretary and manager of the company, with a very handsome piece of furniture in the form of an easy chair made of English morocco leather.

Many friends in the paper trade have learned with sorrow of the death of Benjamin Tooke, President of Tooke Bros., Montreal. He was a director of a number of enterprises including the Spanish River Pulp and Paper Mills.

Hugh I. Fraser, son of the Rev. Donald Fraser, of Mabou, N. S., died recently in Toronto from an attack of influenza. He was twenty-three years old. The late Mr. Fraser was employed for some time in Britnell's book store, and later was on the staff of W. J. Gage and Co., manufacturing stationers, Toronto.

The Modern Paper Box Co., of Guelph, Ont., has been reorganized. The entire holdings of E. E. and J. P. Hale, the former promoters, have been acquired

by other interests. P. H. Secord, of Brantford, is now President of the company and R. Bruce Lang, of Guelph, is Vice-President. The new manager is C. N. Hall, formerly of Galt and Dundas. J. H. Smithers continues as superintendent. The company, whose operations will be greatly extended, specialize in set up and folding boxes and in "safety first" egg cartons.

A charter has been granted to the Canadian Pioneer, Limited, Toronto, with a capital stock of \$100,000 to carry on a general printing and publishing business.

Claud E. Nieely, who is a son of F. P. Nieely, manager of the La Salle Paper Co., South Bend, Indiana, manufacturers of wrapping paper, chip board and specialties, has been appointed assistant sales manager of the Toronto Paper Mfg. Co. Mr. Nieely spent some years in the plant at La Salle and went overseas with the 61st Winnipeg Battalion. He was later transferred to the Imperial West Lancashire Regiment at the front and invalided to Canada, suffering from shell shock. He then joined the Royal Air Force and was an officer, securing his training at Leaside camp. He served in France for some time and owing to an accident and nerve trouble was subsequently in the hospitals in the Old Country and Canada for eight months. Mr. Nieely, who has been spending several weeks at the mill in Cornwall, is now associated with Charles F. Mansell, general sales manager of the Toronto Paper Mfg. Co., whose many friends are pleased to see him at his desk again after being confined to his home for some days with a severe cold.

Leonard Weist, while working in the Modern Paper Box Co., Guelph, Ont., lost a hand. He was feeding card board into a universal cutter and creaser and when a piece fell through he put in his hand to get it and in so doing the press crushed the member in a terrible manner.

The Stovel Co., Limited, of Winnipeg, who are among the largest printers and publishers in Canada, recently sent out to the paper trade a very appropriate holiday greeting. The title of the enclosure to a very neat but effective card was "The Reveille of Peace."

The Canadian Pulp and Paper Association is issuing a series of business stimulaters, which are full of pep and pith and are being sent to all printers, box makers and manufacturers in Canada. The latest publication is entitled, "Why send your goods to market dressed like a slouch." It is a clarion call to neatness, attractiveness and the use of best quality materials in paper, printed matter, packages, cartons, etc.

R. G. Dingman, who for several years has been manager of the Financial Post, of Toronto, has resigned and taken a position with a leading financial firm. His successor is Gordon Rutledge, for several years on the staff of the MacLean Publishing Co's trade publications.

J. B. Beveridge, manager of the Dryden Pulp and Paper Co., was re-elected mayor of Dryden, Ont., by acclamation.

THE MARKETS

CANADIAN MARKETS.

Toronto, January 13.—Trade in the paper arena is opening up fairly well with the advancement of the new year although there is no doubt a deterrent effect owing to the prolonged argument on the newsprint question at Ottawa. Until the price problem is definitely settled buyers in other lines than newsprint will not enter the market so readily. In some specialties there is decided activity and the demand for book and writing papers is reported good. Book and writing prices will be advanced in the cheaper grades as it is felt that turning them out below cost is a poor business policy.

A meeting of the publishers, who are users of book papers, was held in Toronto last week and a deputation will be sent to Ottawa to urge upon the government that Controller Pringle carry out his instructions of the order-in-council to complete an inquiry into book and writing as well as coated papers. This probe was started over a year ago, but beyond one sitting in Toronto there has not been much progress made although the books of two or three mills have been audited by the staff of G. T. Clarkson, of Toronto, the official accountant. It is reported that the Paper Controller has declined to go on with the investigation and the publishers of periodicals desire that he should. They also assert that they have reason to believe that a combine exists among the book mills and it was resolved to have the alleged combine investigated.

The manufacturers, on the other hand, state they are not worrying and are prepared to meet any inquiry. They declare that paper in the instance of several publishers has been furnished below cost and that there has not been an increase of one hundred per cent in price, let alone four hundred per cent as has been alleged, since 1914. Wages have doubled, the cost of all equipment has gone up enormously, pulp is very much higher as well as all other raw materials and freight rates add to the expense. There is no sign of any come-down in the cost of stock, operation and production, marketing or distribution and they will stand to their guns.

One leading mill, in sending out an announcement to the trade, makes some pertinent comments on Canada's unfavorable trade balance and high rate of exchange and says that in order to adjust this and relieve the exchange situation there was never a time

when it was so important for Canadian business houses and Canadian people to buy Canadian made goods when possible. Such a course is essential to the prosperity of both the nation and the individual. The importation of high grade bond and ledger papers from the United States has been decreasing steadily in recent years, owing to difficulties of supplying the demand in their own country, difficulties with transportation and consequent poor deliveries and high rates. Aside from the reason given for encouraging home industry the one big reason why Canadian made paper should be purchased is, that it is equal if not superior in quality to imported and much lower in price. Whether many projects now in the air in the way of extensions to mills will go ahead cannot yet be definitely said. It is pointed out that the high cost of building at the present time militates against expansion and before much is done there must be a way of bringing the excessive cost near to normal. The President of the Canadian Pulp and Paper Association, in a recent interview, stated that while the Dominion enjoyed exceptional advantages in the possession of vast stores of raw materials yet the latter unutilized brings no wealth to the country. There must be applied to them labor and conversion before they can become a marketable commodity and the cost of such labor and conversion must not be disproportionate to their cost in similar industries elsewhere if we are to get our share of the world's trade.

There has recently been sent out to the trade in Canada the rag classifications adopted by the book and writing section of the Canadian Pulp and Paper Association. The rag dealers have adopted the same without comment and the manufacturers are urged to see that the classifications are strictly enforced so that the quality of the rags that are gathered in Canada may gradually be improved over the present standard. There has also been received trade customs adopted by the felt paper manufacturers of Canada in marking, claims, tare, rejected material, weights and quantities, delivery, etc. The classification of rag stock includes roofing rags, No. 1 and No. 2; gunny and bagging, city dump rags, etc.

Prices in all lines of paper remain steady and it is thought there will be no change in the higher grades, at least, for some months. All the manufacturers take an encouraging view of the situation and believe there will be no dull period this year as many predicted be-

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We buy all kinds
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fore the close of the war. The uses of paper are more numerous to-day than ever and the expansion of the printing industry is witnessed on every side. New publications are being launched and others are to follow. All advertising agencies and business promoting mediums as well as mail order houses and department stores are going out after bigger business and, in this campaign, are using a raft of printed literature which makes times good and stimulates demand. When the paper investigation is over at Ottawa and the control of the industry no longer threatened by the federal authorities, there is every hope that the business will strike a stride in Canada, which will mark an epoch in its development and create in the Dominion unprecedented expansion. There are no changes in prices to record this week.

NEW YORK MARKETS.

New York, January 11.—The market for paper continues generally dull. Inquiry from various directions has improved this week, but actual business has failed to undergo important expansion, as buyers for the most part have apparently been endeavoring merely to get a line on prices and have not yet reached the stage where they are ready to resume purchasing on a worth while scale. Demand from export sources is larger. The decrease in freights to South America doubtless has induced consumers in Latin-American countries to come into the market for supplies of paper, and indications point to a substantial growth in business in this direction within the near future. Export firms in New York are leaving no stone unturned in their efforts to grasp the opportunity that appears to lie at present in South America for the paper industry of the United States and Canada. There seems no questioning the fact that America will have to serve as the chief source of supply for consumers of paper in the neighboring countries south of us for at least the next several years, while the probabilities are that if shippers here establish themselves in the proper way in South America they will keep a goodly portion of the trade secured there for all time. Expectations are rife for an extensive export business in paper of virtually all grades, and signs are not wanting that activity of this character already is developing.

Domestic consumers and jobbers have about completed their annual inventories, and it is to be expected that they will soon re-enter the market to buy on a broad scale. Stocks cannot be other than depleted, judging from the policy followed by buyers during the last six or eight weeks, and mills anticipate that many jobbers and consumers will seek to replenish stocks to nearer to a normal point. In the meantime, manufacturers display a firm attitude and are not endeavoring to force the market. Prices are generally maintained and, in some cases, the tendency is upward, though in the majority of instances the trend is more in the other direction owing to the absence of demand.

Newsprint is moving in a consistent manner and at firm prices. Demand has eased up slightly since the first of the year, but not enough to materially affect the situation, and consumers are absorbing fully as large tonnages as they normally do at this season. The attempt of newspaper publishers to have the newsprint price ease reopened has had no perceptible influence on the market. Manufacturers are given to

view the subject with more or less disdain and are not permitting the matter to guide them in their present operations in any manner.

Book papers are rather easy in tone, but there has been no further recession in prices recorded. Mills are not as busily engaged as they would doubtless like to be, yet shipments are of sufficient size to be creative of a fairly steady market, with indications pointing to an increase in business shortly. Fine papers rule decidedly firm in price. Manufacturers show little or no disposition to reduce quotations, claiming that the cost of production remains the same and that until prices on raw material come down they are not justified in lowering their quotations on paper. There is merely a casual demand for bonds, linens and ledgers, however. Jobbers are doing little buying of a substantial character which would indicate that consumers also are greatly restricting their purchases.

No improvement is noted in the demand for coarse papers. Wrappings are moving in a routine way, but fresh buying is slow and apparently involves only such quantities as are directly required. One representative dealer states that demand for coarse papers has fallen off fully 15 per cent during the past four or five weeks. Quotations as a rule are unchanged, though some grades have eased off slightly, bogus papers in particular having declined in price. Tissues are steady despite the poor demand. The Government is still absorbing sizable tonnages of roll tissue, but aside from this, there is no strong factor in the market.

Boards show a tendency to drop in price. Manufacturers argue that the high cost of labor offsets the reduced cost of raw material and that for this reason there is no just cause for prices to decline, but the general lack of demand is a weakening factor. Chip board is selling at \$55 to \$60 per ton, and the probabilities are that some supply could be secured at lower figures in certain directions. News board is quoted at \$60 to \$65.

GROUNDWOOD: The situation in groundwood is firm. Reports from grinding sections tell of a continued reduction in output as the result of freezing weather and difficulties in getting all the wood needed, which, coupled with a fairly voluminous demand from consuming quarters is creative of a steady market undertone. Between \$30 and \$32 per ton at the grinding mill is the range commonly quoted in the East. In the Watertown district, strictly No. 1 mechanical pulp is reported to be freely selling at \$32, and talk has been heard of sales at higher levels.

CHEMICAL PULP: Quietness has ruled in the chemical pulp market. Consumers have displayed more interest and have inquired with greater eagerness, but fresh buying has undergone little actual expansion. There is nevertheless a firm tone to the market. The stand that sellers of pulp have taken is that it is only a matter of time when consumers will need supplies and that when their requirements develop will come into the market and buy accordingly. Domestic bleached sulphite is selling at around \$120 to \$125 per ton for spot lots, while on contract, pulp of this grade is available at \$110 to \$120. Domestic unbleached of newsprint quality is quotable at \$70 to \$80 per ton f.o.b. pulp mill, and domestic easy bleaching sulphite at \$85 to \$90. Domestic kraft has eased off a shade and is now available at about \$95 a ton at the point of shipment.

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WOOD PULP TRADING CO., Ltd.

30 East 42nd Street, New York City

RAGS. The feature of the rag market during the current week has been the increased demand for the cheaper grades. Felt manufacturers have bought in much heavier volume, and this has had the usual effect of strengthening the position of the better classes of material. Reports state that felt mills have just booked orders for extensive quantities of roofing paper. This appears entirely logical in view of the fact that for the past year or more building operations throughout the country have been nearly at a standstill and that already a building boom has started. No. 1 roofing rags have sold to mills at from 2.25 cents a pound delivered up to as high as 2.50 cents for selected packing. Thirds and blues have firmed somewhat and dealers for the most part are now insistent on 3.00 cents, New York, for strictly No. 1 repacked rags. White rags are quiet and more or less nominally quoted. No. 1 repacked whites are available to manufacturers at 6.00 to 6.25 cents a pound l.o.b. New York, while No. 2 repacked whites are quoted at 4.00 to 4.25 cents and street soiled whites at around 2.75 cents.

WASTE PAPER. Buying interest in the low grades of old paper is more active and quite a fair volume of business has passed this week. Folded news in particular has been sought by mills and sales at 85 to 90 cents per hundred pounds, New York, have been recorded. Mixed paper is firmly quoted to consumers at about 60 cents a hundred New York. No. 1 old kraft paper at 3.50 to 3.75 cents and No. 1 old manilas at 1.50 to 1.60 cents. Shavings are quotably steady and are moving in moderate quantity, though the bulk of current demand is for soft white shavings, which are held at around 4.60 cents per pound New York, while No. 1 hard whites are quoted at 5.50 to 5.75

cents. Books and magazines have sagged off in price to an extent. Demand is poor and sellers in most instances have been compelled to grant concessions to get orders from manufacturers. Heavy flat stock is quoted to mills at around 1.50 cents l.o.b. New York.

ROPES AND BAGGING. Demand for old manila rope is dull and prices are nominal. Offerings of sizable amounts to mills at 5.00 cents a pound, New York, have been noted, but most consumers have evinced no desire to buy at any price. No. 1 scrap bagging is available at 3.00 cents a pound, and possibly at a shade under this figure. Few buyers have been in evidence this week.

FOREST PROTECTION CONFERENCE.

Continuing the successful public meetings of previous years, a Forest Protection Conference will be held at Montreal, commencing Wednesday morning, January 29th, and continuing until Thursday evening, under the auspices of the Quebec Forest Protective Association which includes the St. Maurice, Laurentian, and Southern St. Lawrence Forest Protective Associations. In conjunction with these will be held the annual meeting of the Woodlands Section of the C. P. & P. A.

The general program is as follows:

Wednesday Morning, January 29.

Annual Business Meeting Canadian Forestry Association. All members are heartily invited.

Wednesday Afternoon.

(Auspices of Canadian Forestry Association.)

Dual Address by F. J. Campbell, President Canadian Pulp and Paper Association and W. Gerard Power, President Canadian Lumbermen's Association.

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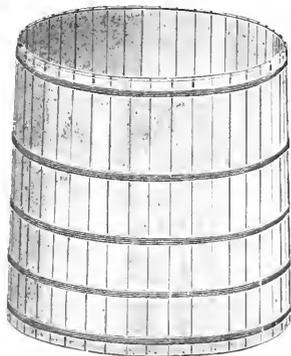
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Address by Hon. W. R. Brown (Brown Corporation), giving the results of clear cutting and selective cutting on the company's limits.

Plenty of time for discussion of each address! Motion Pictures.

Wednesday Evening.

Annual Meeting Quebec Forest Protective Association.

Thursday Morning and Afternoon, January 30.

(Auspices Quebec Forest Protective Association.)

Address by E. C. Hirst, State Forester of New Hampshire, on "Lumbering in Scotland."

Address by Lieut. Lewis, R.A.F., on "Aerial Photography."

Address by Lieut. Biggar, R.A.F., on the Value of the Aeroplane in forest protection.

Address by J. W. Swaine (Entomological Branch, Ottawa), on slash disposal in reference to protection of timber from insects.

Address on the feasibility of slash disposal (speaker's name to be announced.)

The Annual Report of the Woodlands Section of the Canadian Pulp and Paper Association will be brought in and will be of such an interesting character as to provoke ready discussion.

Motion Pictures of aeroplane building, etc.

Thursday Evening.

Annual Meeting Canadian Society of Forest Engineers.

MAKING MEN LIKE THEIR JOBS.

(Continued from page 56.)

useless channels, or what is worse still, into destructive channels.

For example: Let us liken the individual to a steam power plant, into the boilers of which fuel (food) and water are constantly being fed to keep up the internal energy. This power plant can do useful work by allowing the result of this internal combustion (digestion and respiration), the steam, to pass through the cylinders of the engine, thereby making the energy in the fuel available for useful work. If, however, the steam pipe to the engine is plugged and the boilers are still being fired, by properly bringing together fuel, air and water, we must allow the steam (energy) to escape through the safety valve, and so dissipate it into the surrounding atmosphere.

(To be continued.)

Price Brothers & Co. have kindly called our attention to a typographical error on page 946 of the Pulp and Paper Magazine for October 17th, 1918. The figure should have been 211.3 tons per day instead of 121.3. The 211 tons is an ordinary performance for the big Walmsley machines, and the able management of the mill.

O'BRIEN POWER, PULP AND PAPER CO.

The O'Brien Power, Pulp and Paper Co., Ltd., has been incorporated with head office at Montreal, P. Q., and a capital stock of \$2,500,000, to build and operate pulp mills and to carry on generally, among other things, the business of manufacturers of pulp, paper and paper products. Among those interested are L. A. Cannon, G. Parent, L. Casgrain, C. Deslauriers, and A. Chouinard, all of Quebec.



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A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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Room B-30, Board of Trade Building, Montreal.
'Phone Main 2662.

H. W. Thompson, Western Manager.
Toronto Office, 412 C.P.R. Building.
'Phone Adelaide 3310.

Changes in advertisements should be in the Publishers' hands ten days before the date of issue.

Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

Subscription to any address in Canada, United States and British Empire, \$5.00 yearly. Other Countries Postage Extra. Single copies, 15 cents.

VOL. XVII.

MONTREAL JANUARY 23, 1919

No. 4

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EDITORIAL

CAN YOU EMPLOY DISABLED SOLDIERS?

There are two aspects of the returned soldier problem, giving the whole man his old job and finding a new place for the disabled man. Someone in the United States has suggested a new service flag for employers which will show by stars the number of returned soldiers employed. A special star might be used to show how many of these are partially incapacitated.

A big-hearted paper maker whom we met last week suggests that our industry might have a sort of honor roll on which would be recorded the number of returned men employed. Such a record could be made of great value as well as a source of just pride. It is not only an honorable act to employ a returned soldier (though it is but a duty), a company is honored by the presence of these men on its staff. It is a source of pride for all Canada that these valiant fighters are coming back after the sacrifice of time, opportunity, comfort and even life, limb and health, and again taking up the raveled and often broken threads of former activities. For many of them it is difficult to do so, even if they are whole. For many it is impossible to resume the old work. All our industries, and none to a greater extent than the manufacturers of pulp and paper are taking back the men who want to come. It would be a fine thing if a record could be made of the number so re-employed by each mill, and the proportion this is of the men formerly with each company who have returned.

More valuable than such a list, would be to go a step farther and record in the case of injured men the extent of the injury and the position occupied. If there are positions in the mill that could be filled by an injured man—and there are many such — they should be listed and classified. The name of the mill need not be made public, and the record should not imply an obligation to take on such men, but it would serve as a guide to what could be accomplished by a Committee on replacing returned paper and pulp men in familiar surroundings and at familiar tasks. It would be possible for such a committee to help very greatly in getting the square pegs in the square holes. Something along this line has already been done by a Pacific Coast mill, where it was found that more than one hundred positions could be filled by men who were more or less disabled. Unfortunately we have not been able to secure a classification of such positions on the basis of kind and degree of injury. That is the information which would be most valuable in the

re-establishment of the invalid soldier, to the man, the military, and the industry. The collection of the data could be done through the secretary of the Canadian Pulp and Paper Association, and the dissemination of it would suggest many new possibilities to mills that want to do all in their power in absorbing the returned man and putting him back at remunerative, constructive labor, where his initiative and individual expression will count for something.

Having done this for the soldier, our industry (and others) will appreciate to a greater extent the opportunities for the victim of industrial accidents. It is a large task, but a great opportunity for service. Let us get about the work. It takes many a hammer blow to chisel a statue. A big chip here and a small one there is the way it develops. The big mill and the little mill, all play a part. Some can use a man with a very serious injury, another will place a man nearly whole. After a while they will all be taken care of. Patience, perseverance and patriotism will do it. The men who have served in France want to continue to serve, and will do their best as they come back and as we help to give them the chance. A Canadian cannot do otherwise.

In enumerating the various materials whose imports to Canada caused millions of dollars to be sent out of the country, the president of the Canadian Bank of Commerce, in his annual report, mentioned "paper in various forms to the extent of seven millions. In 1918 it exceeded 8 millions. I mention these particular items because we already produce part, and we may eventually expect to produce the whole of our requirements in all of them." The list includes iron and steel, vehicles, engines and electrical machinery, and petroleum. Almost all of these come from the United States, where the trade balance is usually strongly against us and is particularly so at the present time. The expansion of industries that would supply our own needs in these lines would not only keep this money in Canada, but would distribute it among Canadian workmen, who in turn would spend it so as to support other home industries. It is true that we can't expect people to buy from us unless we trade with them, but it is proper to keep out of debt as much as we can.

We have learned with deep regret of the death of Mrs. Judson A. DeCew. Mr. DeCew has the heartfelt sympathy of the paper industry.

ARE WE NEGLECTING NEW ZEALAND?

The imports of printing paper into New Zealand increased from £904,307 in 1915 to £1,810,941 in 1916-17, but the amount bought from Canada increased only from £267,834 to £267,970, a meagre £136. Canada should supply practically the whole of that market instead of only 15 per cent. of it.

The Western Lumberman urges that the educational authorities of British Columbia institute courses in foreign trade education, following the lead of the Universities of Washington, Oregon and California.

Go to it B.C. Perhaps the East will wake up and follow suit.

English paper makers are being advised to apply for the release, immediately peace is signed, of "pivot men"—those whose employment will make opportunities to employ others. This is expected to aid demobilization by getting the skilled and educated men back in harness to help absorb the rest.

ACKNOWLEDGMENTS OF GIFTS AND GREETINGS.

The Pulp and Paper Magazine was pleased to receive many cordial greetings during the new year season. Among these we should mention especially the beautifully prepared greeting from the John Martin Co., of Winnipeg, and the calendar from Sadler & Haworth, Montreal.

From Bates & Innes we have received a copy of their Press Felt Record, which is made up in a convenient size for carrying in the pocket, and is substantially bound up in a convenient size for carrying in the pocket, and is substantially bound to stand the wear that such a book will be sure to receive around a paper mill. The ruled pages have columns headed for: name of maker, maker's number, style, size, date put on, date taken off and remarks. The pages are headed for inserting the machine number. The amount of paper made by the felt could be noted under remarks, but this column will doubtless be used to better advantage in keeping a record of peculiarities in the behaviour of the felt or of the incidents that occur during its use on the machine, which may have had an effect on its performance. There are pages enough of the Felt Record to last a long while.

The book has 32 introductory pages, giving information on the history of paper making in Canada, and the manufacture of the various kinds of pulp and paper. The idea of this section is to give the man in one department of the mill some conception of what is going on in other departments or in other mills. There is a chapter on finding the production of the paper machine, on testing pulp and paper, and a number of other items relating to this business, besides a few pages on miscellaneous information on weights and measures, every day calculations and other points that may arise in connection with mill work. We hesitate to make any critical remarks on the value of this material, as it was compiled by the editor of this magazine, with the assistance of some of his friends.

Sadler & Haworth have produced a rather unique calendar, which is about 20" by 30", with figures 3"

high, and along side of each is a space for a daily memorandum. The figures are arranged in vertical columns. The omission of all the Sunday dates leads us to think that this firm are strict Presbyterians, and do not consider it proper to have any engagements on the Sabbath. This is doubtless a good suggestion.

Toronto Paper Company have sent us a "Daily Reminder." We used one all right, but it takes away a good excuse for not doing a lot of things on time. Ah we need now is a Big Ben, and we should be able to keep up with current events and things.

BUSINESS PROFIT OR PLAIN GRAFT?

A subscriber to the "Paper Maker" who holds an important position in the American Paper Trade has sent that journal an interesting paragraph, in which he refers to the very sore point of high prices for paper, and also gives us some authentic facts which account for the remarkable prices paid for paper under certain circumstances. The gentleman gives actual facts in regard to a certain dealer and says: "Some months ago a certain London paper merchant purchased in this market a quantity of paper—grease-proof paper. The participants were:—

- A.—The buyer.
- B.—A N.Y. forwarding agent.
- C.—An obscure broker, not in the paper trade.
- D.—A local jobber's commission salesman.
- E.—The jobbing firm employing D.
- F.—The manufacturer.
- G.—A well known N. Y. paper exporter.

A. gave the order to B., and B. gave it to C., although G. endeavored to get it and showed energy and judgment. C. could not fill it himself and passed it over to E., who then placed it with F. Both D. and E. made handsome profits, enough to buy each an automobile, and autos cost money these days; and the quantity was less than 300 tons. Heaven knows how much B., C. and F. made on the transaction, but (and here is the lesson), by giving it to E, it fell into the hands of a tricky Yankee who had a short time previously succeeded in shipping generous quantities of jute to a German in the West Indies, said German arranging the licenses through a friendly Spaniard "in good standing." Perhaps the original buyer would have shown some other preference had he known the facts."

LET THE SOLDIERS PLANT TREES.

It is high time that the afforestation problem be tackled in a vigorous and far-seeing manner. The world's supply of timber is steadily declining, and the demand for it is increasing. Canada exports enormous quantities of pulp, which is diminishing our forests, and unless some provision is made our supply will come to an end, and a very profitable industry will be faced with difficulties. We might begin to use our army of returned forestry men for the building up of a national asset in timber which it would only be fair to leave to the same posterity as we leave our debt. Forestry is a business which requires a long outlay of money and no private individual is willing to undertake it on the same terms as the state. The state could turn a considerable number of discharged soldiers to afforestation schemes with advantage to itself.—Ottawa Citizen.

Paper Control Tribunal Still Sits

(Written Specially for The Pulp & Paper Magazine.)

By EVERETT ANDREW.

With eight solid days of counsel's argument behind it, the proceedings before the Paper Control Tribunal swung into the third weekly lap this week, on Monday, and indications as they appeared at Ottawa seemed it was good for quite a few days more at least.

During the week-end the impression appeared to be that appeal in the newsprint case would be wound up around Tuesday night, but the judges are not going to stop then, because it is their announced intention to take up the appeals in the differential immediately after the appeals of the Publishers and the Manufacturers have been heard.

A safe guess as to the progress of the proceedings seemingly was that the differential appeals will be under way by the time this appears in print.

The reply of Mr. George H. Montgomery, K.C., on behalf of the Manufacturers took up the greater part of the sitting last week. Mr. Tilley, K.C., Mr. Thompson, assistant counsel for the newspapers, Mr. George F. Henderson, K.C., on behalf of John R. Booth, Mr. John P. Orde, K.C., for the E. B. Eddy Company and Mr. Victor E. Mitchell, K.C., appeared on behalf of Abitibi, Spanish River, and St. Maurice Companies were heard.

So many large and important questions to the newsprint industry were heard that it is hardly within the province of any lay mind to gauge which was the most essential one. Besides it does not do at this stage to comment whilst the issue is before the judges of the Tribunal.

Summarized the seeming big issues were: Mr. Mitchell contesting of the validity of the Paper Control Tribunal, Mr. Montgomery's address, the non-admission of any new evidence, and the still delayed consideration of the judges as to the admissibility of the evidence given by Mr. Clarkson before the first session of the Tribunal in November into the original record.

So far as developments up to and over the week-end had shown the original record as under review by the judges was shut and closed just as tight as it was one week ago. The Judges, of course, reserve the right (just as they said in November) to hear new evidence. But it must be remembered in this connection that the evidence then given was taken under "reserve" and to all outward appearances it still stays there.

Another interesting feature was the statement of Mr. George F. Henderson, that the John R. Booth mill cannot and will not carry on the manufacture of newsprint paper if the present system of averaging is continued, meaning that Ottawa newspapers will have to go elsewhere for a supply of paper.

Many interesting developments, and sidelights on situations in connection with the newsprint inquiry which have gone before were told of or mentioned. Among them was the statement of Mr. Montgomery that taking the newsprint investigation from the beginning to the present time, as applying to the attitude of the newspapers, had been a "disgrace to the press of Canada," and some members of the press themselves "were ashamed" of it.

A report of last week's proceedings is briefly as follows: On Monday Mr. Tilley concluded his main argument on behalf of the newspapers, and Mr. Victor E. Mitchell, K.C., immediately followed questioning the Validity of the Newsprint Inquiry. He claimed that in the whole proceedings the Government had not power to fix newsprint prices. A long and more or less exhaustive technical argument ensued.

Chairman White pointed out to Mr. Mitchell that the members of the Tribunal were "here" under the authorization of the Government. "If you (Mr. Mitchell) want to question our (the judges) authority you will have to choose some other way of doing it."

Mr. Mitchell went on to explain that his position and contention was that the body was a judicial tribunal whose authority to act, he questioned.

Mr. Justice White then told Mr. Mitchell that he (Mr. Mitchell), was only wasting his time arguing.

Mr. Mitchell then went on to maintain that the Government by its acts had attempted to deprive an industry (the paper industry) of its rights. After more lengthy and involved legal discussion Mr. Justice Middleton said: "This board (the three judges) surely has no jurisdiction to review the acts of the Governor-General-in-Council." He further mentioned that the function of the Board was to investigate the price of newsprint paper which had been set by Mr. Pringle and which had been appealed against.

Mr. Justice Archer ruled that by Mr. Mitchell's contention that he was not only attacking the validity of the appointment of the judges but also the right of all the orders-in-council ordering an investigation into the price of newsprint paper.

Mr. Mitchell said it was what he was doing and intended to do.

Criticism of the action of the Government; the War Measures Act; its powers, etc., was made by Mr. Mitchell, as it related to the newsprint investigation.

Mr. Mitchell argued that the Government acted contrary to the interest of Canada in hindering exports of paper and that the War Measures Act was grossly misused, particularly in the matter of the differential.

Mr. Mitchell took up other branches of his case. Among other items of his address being the criticizing of what he termed "bulky editions" of the press at a time when newsprint paper should have been conserved.

After Mr. Mitchell had concluded Mr. Montgomery began his address on behalf of the Canadian newsprint manufacturers.

In resuming his address on Tuesday Mr. Montgomery followed during the early stages of the morning session the dictum which Mr. Mitchell had advanced the previous day; part of which was that only in so far as the newspapers were being ruined, were the publishers of newspapers entitled to a fixation of newsprint prices. Two cardinal principles were advanced by Mr. Montgomery.

The first was in effect that Mr. Pringle and the members of the Paper Control Tribunal had as a first duty to ascertain the evil complained of by the newspapers, in order to find out how far it would be

necessary to go in order to cure it. Broadly meaning that the representations advanced by the publishers and which resulted in the steps leading up to the Newsprint Inquiry being formed had first to be proved, before anything else was to be done in order to justify the later proceedings. Time, Mr. Montgomery claimed, had shown that the press was NOT being ruined.

The second, Mr. Montgomery said, was that "exceptions had to be considered," so that one industry (the pulp and paper industry) was not to be injured in an attempt to help another industry (the press.)

Taking up the various steps and happenings which had gone before and which the manufacturing industry are fairly well acquainted with through the reports of the proceedings of the newsprint inquiry, Mr. Montgomery Tuesday morning went on to assert that "no attempt had been made before Mr. Pringle to prove the assertion that newspapers were being 'ruined.'" Mr. Montgomery referred to what Mr. Stewart, K.C., Crown Counsel had objected to in 1917, as to evidence being taken to show that newspapers could pass on the increased cost to the consumer. The attitude of the Crown Counsel then was that Mr. Pringle's inquiry would show that if the cost of newsprint was excessive it should be reduced. If not excessive then it was time to inquire whether or not the newspapers could pass the costs on.

Mr. Montgomery dissented from the view which had been advanced by the Counsel for the Government. Counsel for the manufacturers claimed the newspapers had not waited for a final settlement of newsprint prices. Instead most of them had gone ahead and doubled their price per copy.

Another point was that they (the newspapers) aside from anything they had made from the subscription end had greatly benefitted through the medium of advertising in connection with the various advertising campaigns conducted by the Government during the progress of the war. Further Mr. Montgomery read an extract from *The Financial Post* which attributed a dividend of five per cent and a bonus of two per cent for a certain quarter, of the fiscal year of an Ontario newspaper. In the afternoon more about this reference was heard, which is referred to further on. The proprietor of the paper who paid this dividend was Mr. Montgomery claimed, the man who more than any other was responsible for the newsprint inquiry and who had told the Government that newspapers should be treated as universities rather than commercial enterprises. Counsel for the manufacturers went on to assert that this paper could not have been one of the best off, as its proprietor had put up the loudest howl.

Mr. Justice Archer wanted to know if there was any evidence that this paper was one of the worst off? Mr. Montgomery replied that the manufacturers had not means of getting this evidence. "We can only assume that the man who howls loudest is the hardest stuck."

Mr. Montgomery then went on to refer to the profits made by the Ogilvie Flour Mills giving it as being 48.75 per cent last year on the common stock, thereby showing that even sometimes in a price regulated industry, some concerns will necessarily make large profits, and for this reason it was manifestly unfair to judge all the paper mills by the profits shown for the Laurentide Company.

A general laugh resulted when Mr. Tilley inquired what page of the evidence the profits of the Ogilvie

mills was on and Mr. Montgomery replied, "Oh, it is not on the record, it is just an illustration."

Demand Exceeds Supply.

Mr. Montgomery referred to the period previous to the war stating that then the supply of newsprint sometimes exceeded demand. During the war period Mr. Montgomery said the opposite had been the case, and was a period when the manufacturers might look for a profit. This profit might not only be a reasonable one but one which would be sufficient to take care of the previous seven lean years and seven more which would probably follow.

The actual costs of manufacture at Price Bros. was gone into and as reflected by the reports of Mr. Clarkson had advanced from \$34.79 in March, 1917, to \$44.72 in February, 1918. Price Bros., he said, had been less effected than some other mills by the increases in costs. He also drew attention to the publishers of the United States acquiring a supply of paper from the Harnsworth Mill in Newfoundland. He claimed that even under favorable conditions that the "contracts" read: "COST PLUS \$15 PER TON." He went on to mention that this amount had later been reduced to "cost plus \$10 per ton," as the publishers company was selling to its own customers at \$70 odd, as compared with the then fixed price of \$60 per ton for private manufacture.

Mr. Montgomery contended that Canadian newspapers had refused to accomplish the fifteen per cent in reduction of news matter as in force in the United States. He admitted that the Canadian press had agreed to give fewer exchange copies and to conserve paper by refusing to accept the return of copies from the news dealers.

On resuming on Tuesday afternoon, Mr. Montgomery said that his reference of the morning regarding the item in the *Financial Post* had been read into the record, and went on to further explain that on this basis if the same profits continued for a year the return would be twenty per cent in dividends with an eight per cent bonus. The paper referred to was *The Toronto Star*.

In regard to the Canada Export Company, he said it had been formed for the purpose of developing export trade to South Africa, South America, New Zealand and Australia. The Webb Bill in the United States was cited showing that any combination of persons for the purpose of export was not to be considered a combine.

"It may be here remarked that apart from the irrelevancy of the inquiry into the affairs of the Export Company, there was a particular reason for the objection to the enlargement of the proposed investigation—a reason which explains the persistence of the publishers."

"As previously noted the American Newspaper Publishers' Association, of which a large number of Canadian Publishers are members, had secured the indictment for alleged violation of the Sherman Law of seven of the manufacturers—five of them being mills under investigation (in Canada.)

The cases were then awaiting trial in the United States.

The patent objective of the proposed inquiry was to make use of the Canadian investigation as a fishing expedition to secure evidence for use in connection with the criminal prosecutions in the United States.

The Manufacturers pointed out to the Publishers' counsel the gross unfairness of this, and this having failed, drew the attention of the Commissioner to the object of the Publishers.

Subsequent events proved that this was the only objection the Publishers had in coming into the investigation and when their attempts had failed they withdrew.

Mr. Montgomery referred to Mr. Richardson's position at the Calgary hearing before the Controller. The Manufacturers, he said, had first been told that the Publishers were not coming in, but after repeated requests from Mr. Pringle they did come in. The burden of establishing the ground for the inquiry, Mr. Montgomery claimed rested with the Publishers, but they had made no effort to relieve themselves of it and threw the responsibility upon the Crown Counsel, Mr. Stewart, K.C.

The differences in the various figures in the Clarkson reports Mr. Montgomery explained was due to the period that elapsed from the time the accountants had started at the first mill until they had been able to get around to the last. Consequently, when some costs were presented they were out of date owing to the changing wood costs and other conditions.

Touching just then briefly on the matter of differentials Mr. Montgomery said it had been a case of actually taking thirty to thirty-five dollars per ton of money earned and handed over to the Canadian publishers.

He went on to point out that differentials was a matter between the mills themselves. In reference to the Order-in-Council authorizing the differentials and the compensation of one mill by or to another, he said: "It would require very strong evidence before any court that a proceeding of that kind was essential. It was purely confiscation."

The method and practise followed by Mr. Clarkson in preparing his reports was referred to. It was the same Mr. Montgomery said as had been followed in the United States investigation and eliminated everything that could be considered as a hazard. "His (Mr. Clarkson's) reproductions have been costs pure and simple," said Mr. Montgomery.

He mentioned that in February, 1917, the costs of one mill ran as high as \$96.77 per ton without allowance for selling which if added would send the sale price over **one hundred dollars**.

Mr. Justice Archer wanted to know why the difference in costs of Preece Bros., as shown for the month of March, 1917, in the first report at \$76.06 should in the second report be shown to be only \$34.71.

Mr. Montgomery pointed out that at times with some mills low water interferes with operations and production does not keep up and costs go higher. At other times slush pulp cannot be used and lapped pulp has to be substituted. During the period, according to Mr. Montgomery's explanation of what Mr. Clarkson had said, was that between the first visit of the accountants and the second that a change had been made in the inventory system or the cost charge system, with the result that the second report reflected inventory prices but had no reference at all to selling prices. Counsel went on to give various examples as to the different methods which may be followed in building up a selling price. Inventory costs he showed did not necessarily mean market values of materials.

As to the contention that had been raised by Mr. Tilley as to the need for increased working capital Mr. Montgomery showed that with values going up all around due to war conditions and supplies of commodities becoming scarce that the manufacturers had to protect themselves by securing larger stores than usually carried during the pre-war period. Increased values and stocks obviously required greater working capital. Even then it was not all smooth sailing. There were losses and inconveniences. Fires occurred in coal piles, additional storage accommodation had to be provided, in some cases new buildings erected.

"Coal is only one item," continued Mr. Montgomery. "It is a large and important item. It requires practically ton for ton, per ton of paper." Another prospect that had to be considered was when the embargoes were removed and the price went down, if the manufacturer had on hand a greater supply than the man who bought from day to day, who was going to recoup him? Increased labor charges was another big element in advancing manufacturing cost.

The increased cost of food for woods operations were referred to and some mirth was caused ament the "pork and beans" evidence of Mr. H. I. Thomas given before Mr. Pringle.

As regarding the position the manufacturers had been placed in by the accountants being sent into their mills in connection with the investigations, Mr. Montgomery said: "You would think we were trustees for the newspapers and have to render an account of our stewardship." The principle of averaging costs was taken up and Mr. Montgomery cited what had happened in the United States in relation to the attempt to fix an average price for coal. The result of it was that the price was not sufficient to allow the higher cost mines to operate. Then it was found a new price had to be set if production was to be maintained.

Mr. Montgomery maintained that when the price for paper was set that it should be high enough to give a profit to the high cost mill efficiently conducted.

He went on to trace the history of the Pringle investigation and quoted figures for various mills, showing that while the manufacturers were compelled to sell at \$50, that it did not equal their manufacturing costs. "It has been a disgrace to the press of the country. Some of them are ashamed of it," said Mr. Montgomery.

Mr. Tilley objected and wanted to know further details.

Mr. Montgomery referred to the Montreal Gazette and its editorials on the newsprint situation.

Mr. Montgomery cited the position of the Canada Paper Company and averaged its costs from January to March, which he said was \$33.99, and selling expense \$1.69. The publishers state the costs were \$50.33. "The real costs for the last month investigated were \$58.99, without selling," continued Mr. Montgomery. "yet they (Can. Paper Co.), were called on for eleven months to supply paper at the Government's price, which actually cost over sixty dollars." The Ontario Paper Company and St. Maurice were also mentioned.

In connection with the News Pulp and Paper Company the early statement had been used reflecting costs at \$38.81, whereas the cost averaged over January, February and March, was \$51.54 without selling.

"You can see where they (Can. Paper Co.) were getting off at," Mr. Montgomery told the judges.

Tracing further the history of what had happened in the Pringle investigation Mr. Montgomery drew attention to the meeting of January 10th, after which the publishers issued a certain bulletin, which, as Mr. Montgomery styled it, "was sent out by their own people." The manufacturers' counsel secured one of the bulletins, and as he told the judges it was the first source of information the manufacturers had been able to receive as to what the newspapers wanted inquired into. "Arbitrary figures, machine losses, and the like —"

Continuing on Wednesday, Mr. Montgomery resumed his remarks regarding the practice the newspapers had adopted, and the position they had taken in regard to the securing of information concerning the newsprint inquiry. "The publishers have never fought in the open in this case," said Mr. Montgomery. "They did everything but appear in court in an honorable manner. It was grossly unfair." Concerning activities of Mr. Inrie, Mr. Montgomery said "He did nothing but hedge."

The selection of four low cost mills by the newspapers as a basis for arriving at cost, Mr. Montgomery styled as grossly unfair to the high cost mills. He pointed out the wide variance of costs and cited the unjustness it would bring to such mills as Brompton and the Canada Paper Company.

Mr. Montgomery maintained that the Judges could not take the evidence at the November session into account, as it had been taken under reserve. He also pointed out that it was on a good deal of this evidence that the publishers' brief was built. The tribunal pointed out to Mr. Tilley that counsel for the manufacturers had not been given an opportunity of cross-examining upon it.

The situation was that in the examination of Mr. Clarkson in November late costs of the Laurentide mill were put in. These costs the newspapers claimed were lower than during the previous six months, but that for the period Mr. Pringle had raised his price to \$69. The contention was the publishers had never seen the late Booth costs.

Justice White took the view that it might be fair for Mr. Montgomery to state that he had information leading toward the belief that if Mr. Clarkson was recalled that his testimony of the Booth costs might neutralize those of the Laurentide Co.

Mr. Montgomery explained to the judges how it was necessary to manufacture during high water, and lap the pulp and store it. If a mill doing this could not use all of its pulp while it was in good condition the surplus would be sold. Sometimes in order to get fresh stock mills had to buy again. In the case of the Booth Company, for instance, there had been periods where it had bought more than it sold. Mr. Montgomery drew attention to the fact that the publishers' brief did not make any deductions for slush or lapped pulp in the case of Price Bros. Mr. Tilley explained this was because Price Bros. did not sell any.

The contention contained in the main argument of the publishers regarding the weighing of wrappers was next taken up. Mr. Montgomery maintained that with the sole exception of patriotic fund subscriptions, etc., which in some cases was as low as three cents per ton, that the matter of wrappers would be

the one about which the newspapers would make the most noise.

Mr. Montgomery pointed out that it was the custom of the industry now and always had been to adopt the method followed. "Cost statements are always gotten up in that way. If you don't figure it out that way you have to allow a larger margin. That's all there is to it."

In reply to the Tribunal Mr. Montgomery later said that the cost of wrappers was undoubtedly included in the manufacturers' costs, but that the weight of them which he believed was about thirty-two pounds per ton, was not included in the weight by which costs are divided in arriving at a cost per ton. "I still admit that if you want to get anything scientific and ethical there is more to be said for this item than any other the publishers have."

Objections raised to the charging up of the Patriotic Fund contributions of the mills was next heard about. The short and long of the matter was, as explained by Mr. Montgomery, that all companies ran, as incidental to their business a charitable account. Contributions to the Patriotic Fund was an expense, just as much as any other expense of such a nature as if the company had not been operating it would not have been called upon to pay it. "In a sense it is a voluntary tax; in another a forced tax. Every company operating has to meet contingencies of this kind."

Counsel for the manufacturers went on to point out that shareholders, officers and employees of the paper mills subscribed and contributed individually to the same funds. As regarding the contribution or subscription of the company, it was a matter of book-keeping, and it was unfair to suggest that the manufacturers had advanced their prices of paper and passed on to the newspapers the cost of their own (private) subscriptions. "You know how much we have had to advance our prices. The whole thing only means that the cost was that much higher, and the profit so much lower."

In the afternoon the members of the Tribunal announced that the differential appeal would be taken up as soon as the present appeal then before the court had been disposed of.

Later on, when the question of the appointment of a pulp and paper expert to assist Mr. Clarkson was taken up, Mr. Montgomery vigorously attacked the Canadian newspaper publishers. He said directly to Mr. Tilley, "In every instance you people went behind our backs."

Mr. Montgomery went on to give the history of what happened in the Dominion Cabinet, in connection with the newsprint sub-committee in 1918, the time being early in the year, and the time at which Mr. Pringle's then allowed price of \$57 per ton was asked to be disallowed. It was the statement of Mr. Montgomery that Hon. A. K. McLean and Hon. Mr. Read, had wanted to confirm the price, while Hon. Newton Wesley Rowell and Hon. Calder had been against it.

In other words it appeared from what Mr. Montgomery said that the sub-committee of the Cabinet then composed of four members, was at a deadlock, and to cut the "Gordian knot" the Minister of Justice was added to the Committee, with the result that a decision had been reached to accept the Controller's recommendation that the newspapers pay \$57 per ton, an increase of seven dollars, which was to be paid

into a bank instead of direct to the newsprint mills.

Mr. Montgomery made no bones about it when it came down to the Booth mill indicating a shut-off of supply in September last if the Newsprint Controller did not allow a higher price to them. Even in face of what had gone before Mr. Montgomery said that he was inclined to feel that Mr. Pringle had been kind to the newspapers rather than otherwise in proceeding to comply with the demands of Mr. Booth.

Booth Cannot Continue at Present Price.

On Thursday Mr. George F. Henderson, K.C., spoke on behalf of the John R. Booth mill. In referring to the charges made at different times that Mr. Booth had "threatened" to do "so and so," Mr. Henderson said that whether it was by accident or design the question of the newsprint price had been "raised" as a "peculiar" time. Mr. Henderson reminded the Judges that there was then still a war going on. He did not wish to introduce political issues, and furthermore said that Mr. Booth, like the large majority of the people of Canada, had then a desire to assist the Coalition Government, and not embarrass it, in its intention of winning the war.

Tracing what had happened, he said that at that stage no one had dreamed that the report of Mr. Pringle would be interfered with unless as a result of a review, by an appeal court or tribunal. "But when the manufacturers found," continued Mr. Henderson, "that a committee of the Cabinet was acting as an appeal tribunal, and giving a decision as a matter of policy without reviewing the evidence Mr. Booth was the first of the manufacturers to call a halt."

Later, as Mr. Henderson put it, Mr. Booth simply said, "I cannot make paper at that price. If you can, Mr. Pringle, here is my mill." Mr. Pringle had found the task impossible.

Mr. Henderson thought the trouble was that the vicious principle of averaging had been adopted when a price for paper was being set. "The result has been that Mr. Booth for nearly two years has been making paper and selling it at what in a business sense is an actual loss of perfectly good money, and there is a limit to the sort of thing, even to a man of his means and loyalty. It may as well be understood that the manufacturers cannot carry on under existing conditions unless the price permits of the business being profitably carried on."

Mr. Justice Archer asked, "Your suggestion is that we fix a price for each mill?"

Mr. Henderson: "It should be fixed on the basis of the higher cost, not the average, mills and the surplus profits made by the low cost mills could be taken by the Government under the war profits act."

Chairman White asked of Mr. Henderson if it was not the business of the Judges to see that the product of the mills is sold at fair prices.

"Then what are you going to do with the high cost mill? You are going to put it out of business at a time when demand is greater than supply," said Mr. Henderson.

Mr. Justice Middleton: "I quite agree if the price fixed should bring about insolvency on the part of some of the mills —"

Here Mr. Henderson made what was perhaps the most important statement on Friday. "The Booth mill cannot and will not carry on the manufacture of newsprint manufacture if this system of averaging is continued, and if it is continued the Ottawa newspapers will have to go elsewhere for a supply."

Mr. Henderson further on took up Mr. Tilley's argument that the Booth mill employed more working capital than was necessary. "Mr. Booth assures me there is not a dollar more active in the business than the business demands," said Mr. Henderson.

During the day Mr. Tilley presented his accountant's computations of additions to cost of newsprint, due to including wrappers in the total costs, but not including their weight to the amount by which these costs are divided to get at the cost per ton. It was decided that accountants for both the manufacturers and the publishers confer and arrive at a figure mutually acceptable.

Dealing with the question of stumpage Mr. Montgomery claimed it would be impossible to arrive at the value of the limits and the exact amount which leased Crown lands had cost the holders. Some of them he said, dated back to 1842. The stumpage basis he thought was a fair one to go on. The statement that limits were renewed by natural growth was challenged by him. Spruce, he claimed, took one hundred and forty years to reach full development, but it could be cut much sooner than that. He referred to the reforestation operations of the Laurentide Company.

Mr. Justice Archer wanted to know if this work was being carried on on lands under license. Mr. Montgomery informed him it was on land held in "fee."

The same justice wanted to know if an operator cut all the timber off a limit if he could give it up, or would he have to go on paying dues. Mr. Montgomery said: "We would have to give up the whole limit if we gave up part. I think, so we have to continue the dues." To Mr. Montgomery's explanation Mr. Henderson added:

"And mills have no greater horror than that of letting a small operator get into the midst of their limits—a privateer they call him."

In explaining depreciation, Mr. Montgomery referred to what had been allowed in the United States and which Canadian manufacturers had adopted. It was virtually a conversion of a five per cent. charge into so much per ton. He also drew attention to the fact that the accountants in the United States had been unanimous in allowing this charge, and agreeing on the figure.

Mr. John F. Orde also spoke on behalf of the E. B. Eddy Company.

On Friday afternoon the sitting adjourned till Monday morning.

TWENTY YEARS IN WHOLESALE PAPER BUSINESS.

The annual meeting of the Rateliff Paper Co., Limited, Toronto, was held last week and an encouraging year's business was reported. F. L. Rateliff was re-elected President, T. E. Gain, Vice-President and N. J. Rateliff, Secretary. The company has been twenty years in business, first starting at 34 Church street, and later removing to 30 West Market street, while a few years ago another removal took place to their present commodious and spacious premises at 44 York street. A number of employees have been in the service of the firm since its inception and the travelling staff has recently been increased by the addition of three new members. The company report that the outlook for business during 1919 is very bright.

Sweden's Cellulose Trade

Consul George D. Hopper, Stockholm, has furnished the following information regarding the expansion in the cellulose industry of Sweden:

Sweden's first wood-pulp grinding mill was erected at Ohnan, Trollhattan, in 1857. It was followed in 1866 by another wood-pulp mill, after which a number of new mills in succession grew up in different parts of south and central Sweden, but as far as regards Norrland only in exceptional cases. In 1870 the number was not less than 10. Twenty years later the number had grown to about 70.

As early as 1870 the cellulose manufacture gained a footing in Sweden, due mainly to the energetic and conscientious labor of Count Sten Lewenhaupt, who was the initiative spirit in and director of the erection of the majority of cellulose mills in the new industry. The oldest mills were in Delary and Warmbol, the first mentioned being erected in 1871. A factory exists at present at the same place.

The expansion may be illustrated with a few statistical data. The number of boilers in the cellulose mills in 1896, the year previous to the industrial statistical reorganization, was 200, 10 years later 244, and in 1914 not less than 360. Besides, they possessed at the latter period a greatly increased average production capacity. Of the 360 boilers, 261 were sulphite and 99 sulphate boilers. The number of grinding chairs, increasing from 294 to 397, does not show a relative growth.

Output of Pulp.

From unofficial sources it is estimated that the number of "pure" cellulose mills during 1915 was 53, of which 30 were exclusively for sulphite, 15 exclusively for sulphate, and 2 for sulphite and sulphate manufacture combined, the cellulose furthermore being scheduled in combination with other manufacture at 33 mills (total, 88 mills). The "pure" wood-grinding mills were 64. Wood pulp was manufactured at 174 mills in all. The production, after reducing all the pulp to dry weight, was as follows:

Year	Chemical wood-pulp Tons	Mechanical wood-pulp Tons
1892	40,000	46,000
1897	118,000	119,978
1902	242,352	153,082
1907	445,491	215,983
1912	809,684	516,169
1915	909,912	305,819

The cellulose production had in 1915, after about 23 years, increased almost twentyfold, while the wood-pulp grinding production during the same period had increased almost sevenfold. The expansion of the cellulose industry has been relatively greater than the mechanical wood-pulp industry.

The valuation of the cellulose production during 1896 was 12,000,000 crowns (\$3,216,000), constituting 1.7 per cent of the aggregate value of the production of the whole mill industry, 694,000,000 crowns (\$185,992,000) in 1915. On the other hand, when the valuation figures had increased to 122,000,000 and 2,498,000,000 crowns \$32,696,000 and \$669,464,000, respectively, the per cent figures had increased to about 5 per cent.

Sulphite spirit is the best of the so-called by-products. The waste lye from the sulphite has in concentrated form come to many uses; for example, as an absorbent for various purposes at foundries. Its most

important use, however, will be found after long experimentation, to be as raw material in the reproduction of organic-chemical preparation in, for example, color material.

The chief by-products in the manufacture of sulphate cellulose are the distillation products — turpentine and rosin.

Sweden Foremost in Cellulose Export.

The United States has first place in the production of cellulose, with a yield in 1913 of 1,320,000 tons, while Sweden as second produced 860,000 tons, Germany occupying third place with 839,000 tons. Other countries of importance in the order of their production are: Norway, 305,000 tons; Austria-Hungary, 300,000 tons; Finland and Russia, 290,000 tons; and Canada, 254,000 tons.

While the production in the United States and Germany is required for home consumption, Sweden, on the other hand, has at its disposal a larger export surplus. The result is that Sweden stands foremost among nations in cellulose export. The export in 1913 amounted to about 656,000 tons, Norway taking second place with about 210,000 tons. Sweden's export during 1915 amounted to about 722,000 tons cellulose (dry weight) at an aggregate value of 100,000,000 crowns (\$26,800,000). The average export to foreign countries is about 78 per cent of the cellulose and 53 per cent of the mechanical wood-pulp production.

England is Sweden's best customer, as about one-half of the total production of wood-pulp is exported there.

It is possible that at least the majority of the 11 sulphite mills now planned or under construction may be completed this fall. With those already in operation there will be 18 comparatively new sulphite mills. The seven older ones are now producing about 375,000 liters monthly. An additional increase in the quantity of spirit is now expected on account of the new mill at Karskar, which is expected to produce 80,000 liters monthly.

The aggregate production capacity of the 18 completed mills will then be about 18,000,000 liters yearly, not an unimportant figure considering that the normal benzine import amounts to about 25,000,000 liters.

WILL SEND REPRESENTATIVE TO BRITAIN.

The Ontario lumbermen waited upon Hon. G. Howard Ferguson, Minister of Lands, Forests and Mines in Toronto last week and suggested that a capable man be appointed to visit the Old Country in the interest of the white pine trade and to conduct a propaganda for securing orders for the mills in the province. The lumbermen will nominate the man and pay his salary while the Ontario government will provide all the other expenses. The appointee will be attached to the office of the Ontario General Agent in London and a campaign of publicity will be carried on by him in making known the admirable qualities of white pine for building and other purposes. The lumbermen have nominated A. C. Manbert, of Toronto, President of the Canadian General Lumber Co., as their representative to go abroad and will pay him a liberal salary. In case Mr. Manbert accepts, the choice is regarded as an excellent one. W. Gerard Power, of St. Paeome, Que., President of the Canadian Lumbermen's Association, was a visitor at the conference. Mr. Power, whose firm deals largely in pulpwood, will give an address before the Canadian Forestry Association at the forthcoming convention in Montreal.

Technical Section

Of the Canadian Pulp and Paper Association

Standard Methods of Analysis

The following tentative methods of analysis are printed in this issue at the request of the Program Committee, so that all members may be ready for a prompt discussion and action.—*Editor.*

As the work of the Committee on Standards for 1917 was practically completed at the time of the last meeting the only action necessary this year is the publication of methods of analysis recommended by the Committee as then constituted. In accepting the report last year the Technical Section voted to try out these methods for a period of probation, after which they could be corrected and adopted as standards.

The Committee's letter of submittal reads:—

"Your Committee on Standards for 1917 has been asked to prepare a report of its activities during the past year. We beg to submit as a report a recommendation for the adoption of the enclosed methods of analysis and testing for pulp and paper work.

"Several of these methods are standards for other societies, and the others have been brought before the Association through the Pulp and Paper Magazine.

"Your Committee feels that they may recommend these methods for adoption as standards for this Association.

(Signed) J. A. DeCEW (chairman),
R. W. HOVEY,
R. E. COOPER,
J. O. MASON."

Sulphate of Alumina.

SAMPLING:—Five percent of the packages in the shipment should be sampled in the case of ground alum. The portions from the various barrels or bags shall be mixed together in one composite sample representing the shipment.

Equal quantities from twelve taken at random shall be taken as a representative sample of alum for each carload shipment of ingot alum. These samples shall be ground together in one composite sample representing the shipment. Alum should be readily soluble in cold water.

INSOLUBLE MATTER:—Weigh out 25 grammes of the alum in a beaker and dissolve in about 200 Cc. of hot distilled water. Filter through a weighed Gooch or alundum crucible, using suction to hasten filtration; wash well, dry to constant weight and calculate per cent Insoluble Matter.

ALUMINA AND IRON OXIDE:—The filtrate from the foregoing should be poured into a 500 Cc. graduated flask, carefully rinsing the last traces of the filtrate into the flask. The flask is brought to the temperature of calibration, the liquid diluted to the mark, and well shaken. Draw out 100 Cc. of the solution by means of a pipette and dilute to 500 Cc. in a calibrated flask. From this second flask 50 Cc. (corresponding to 0.5 Gm.) is drawn out with a pipette, and transferred to a beaker.

Dilute to about 150 Cc., add 5 Cc. of concentrated hydrochloric acid and a few drops of concentrated nitric acid; heat solution to boiling, and add slowly dilute ammonia until a slight excess is present; continue boiling until there is only a faint odor of ammonia perceptible. Remove beaker from source of

heat and filter on an 11 Cm. washed filter, using suction in conjunction with a platinum filter cone; wash with hot water until free from chloride, and ignite the moist precipitate in a platinum crucible over a bunsen burner. When the filter has been entirely consumed ignite over the highest heat of the blast or No. 4 Meker burner, to constant weight. Calculate percentage of $Al_2O_3 \cdot Fe_2O_3$. (We have found by experiments that igniting for $\frac{1}{2}$ hour over a blast or No. 4 Meker burner is sufficient to dehydrate the alumina).

Note:—Before precipitation with NH_4OH , if a little tannin is added, the precipitate will be more granular and easily filtered.

IRON:—From the first 500 Cc. flask, transfer to a beaker 100 Cc. (corresponding to 5 Gm.) with a pipette, add 5 Cc. of concentrated sulphuric acid, and heat solution nearly to boiling. Add permanganate drop by drop till permanent strong pink color, to oxidize any possible reducing matter. Run through a Jones reductor in the usual manner, cool and titrate with standard potassium permanganate solution.

CALCULATE PERCENTAGE OF Fe_2O_3 :—For alum containing less than 0.1 per cent iron use the following method adapted from that of Stokes and Cain J. A. C. S., 29, 4, 409-447 (April, 1907), making use of a colorimeter similar to the one therein described in which two test tubes 8 inch by 1 inch whose diameters are very nearly alike, are employed.

A solution, containing 0.1000 Gm. ferrous iron per litre is made by dissolving 0.7026 Gm. ferrous ammonium sulphate in a litre of water. By diluting 10 Cc. of this solution to 500 Cc., 10 Cc. of the resulting solution will contain .00002 Gm. of iron. This produces about the proper depth of color for comparison.

Into one of the test tubes, 10 Cc. of the above solution is put, together with 10 Cc. of water, 5 Cc. of sulphocyanic acid solution (saturated with mercuric sulphocyanate, see above reference, pp. 413 and 444) .01 Gm. ammonium persulphate and 10 Cc. amyl alcohol. Into the other tube, 5 Cc. of the alum solution is run from a 10 Cc. burette, and 19.5 water 5 Cc. sulphocyanic acid solution .01 Gm. ammonium persulphate, and 10 Cc. of amyl alcohol added. Both tubes are then thoroughly shaken and comparison of the colors in the colorimeter is made as soon as the amyl alcohol layer is clear. If the color of the alum solution is weak it is adjusted to standard by adding alum solution, 1 Cc. at a time, and shaking well. If the color is too strong, the alum solution may be added to the iron standard until the colors match, and then considering the "alum solution used" to be the difference between the amount of alum solution in one tube and the amount added to the iron standard tube. By dividing .00002 by the number of grammes of alum represented by the alum solution used, and multiplying this quotient by 100, the percentage of iron in the alum is obtained. This number multiplied by 1.43 (the ratio of ferric oxide to iron) gives the per cent of iron calculated as iron oxide, Fe_2O_3 .

(a) The ferrous iron should also be determined and results subtracted from the total iron to obtain the ferric iron present.

Optional method for ferrous and ferric iron.

Ferrous iron:—

5 grms. of sample are dissolved in 15 Cc. 1:1 hydrochloric acid. Heat until dissolved. Add 10 Cc. mercuric chloride (50 grms. per L.) and pour into a 600 Cc. beaker containing 100 Cc. water and 12 to 15 Cc. phosphorus titrating solution and titrate with standard potassium permanganate.

Titrate a blank on the solution used and subtract from the first titration.

Determine iron value of the permanganate by means of ferrous ammonium sulphate.

The phosphorus titrating solution is made by dissolving 160 grms. of manganous sulphate in 1750 Cc. of water and then adding 330 Cc. phosphoric acid (syrup sp. gr. 1.7) and 320 Cc. concentrated sulphuric acid.

The total iron is determined by the same method except that just as the alum is dissolved in the hydrochloric acid, a solution of stannous chloride is added drop by drop and boiled very gently until the yellow color due to ferric iron is just completely discharged.

SULPHURIC ANHYDRIDE:—50 Cc. of the 1 per cent alum solution is drawn out with a pipette and transferred to a beaker. Dilute to about 200 Cc., add 1 Cc. concentrated hydrochloric acid, bring to boil and then add drop by drop 10 Cc. of 5 per cent barium chloride solution. Allow the precipitate to settle. Filter, wash, and ignite in the usual manner.

(b) The gravimetric method of sulphates is satisfactory when all sulphates are present as free sulphuric acid, sulphates of ferrous or ferric iron and sulphate of alumina. If sulphates of the alkalis, lime zinc or magnesia are present, serious errors may be encountered unless all these impurities are determined and the proper correction is made.

Optional method for sulphates combined with iron or alumina.

An aliquot part of the alum solution equivalent to .5 gm. alum is pipetted off in to a 400 Cc. beaker containing 250 Cc. distilled water which has been boiled to remove carbon dioxide.

The solution is then brought to the boiling point and titrated to a faint pink with N/5 caustic soda solution using 1 Cc. phenolphthalein as an indicator.

When the end point appears to be just reached, boil the solution for one minute. The pink color should disappear during the boiling and the titration is then completed. Only a very few drops will be necessary for the second titration.

The value of the N/5 caustic soda in terms of sulphuric anhydride combined with iron and alumina may be found by standardizing against 1 gm. of C.P. potash alum. The total alumina in the potash alum must be carefully determined and the amount of sulphuric anhydride combined with the alumina must be calculated.

Alumina oxide $\times 2.3504 = \text{SO}_3$ present in $\text{Al}_2(\text{SO}_4)_3$.

CALCULATION OF RESULTS—Only the alum dissolved in water in the above analysis shall enter into the results.

Iron and Aluminium oxides minus the total iron equals total alumina.

Ferric iron $\times 2.1509$:—Sulphuric anhydride.

Ferrous iron $\times 1.4339$:—Sulphuric anhydride.

Total sulphuric anhydride determined by titration less the sulphuric anhydride present in the ferrous and ferric iron equals the free sulphuric anhydride and the sulphuric anhydride combined with the alumina.

Ferrous iron $\times 2.7204$:—ferrous sulphate.

Ferric iron $\times 3.5807$: ferric sulphate.

Sulphuric anhydride free or combined with alumina $\times 1.4255$: Aluminium Sulphate $\text{Al}_2(\text{SO}_4)_3$.

Aluminium sulphate $\times .2985$:—combined alumina.

If the combined alumina is less than the total alumina, the difference is basic alumina.

If the results obtained for combined alumina are more than the total alumina, free sulphuric acid must be present. In the latter case, calculate as follows:

Total alumina $\times 3.3504$:—Aluminium sulphate.

Aluminium sulphate $\times .7015$: combined sulphuric anhydride.

Free and combined SO_3 less combined SO_3 :—free SO_3 .

Free sulphuric anhydride $\times 1.2250$:—Free sulphuric acid.

Basic alumina or free sulphuric acid may be confirmed by the Potassium fluoride method.

FORM OF REPORTING RESULTS:—

Water insoluble matter	.....
Ferrous Sulphate	.....
Ferric Sulphate	.....
Basic Alumina	.....
Free Sulphuric Acid	.....
Aluminium Sulphate	.....
Combined water (by difference)	.....

100.00%

FREE SULPHURIC ACID:—The method is described in J. I. and Eng. Chem. Vol. 7, No. 12, p. 1059, and is as follows:

3.4038 grammes of the finely ground sample or an equivalent amount in solution (100 Cc. sample containing 3.4038 grammes per liter) are taken for analysis. The powder is dissolved by boiling with 100 Cc. of distilled water in a 4 in. casserole with clock glass cover. To the hot solution 10 Cc. of N 2 H_2SO_4 are added, and after cooling to room temperature (20 deg. Cent.), 18 to 20 Cc. of the potassium fluoride reagent are added and $\frac{1}{2}$ Cc. of phenolphthalein indicator. The solution is now titrated with N/2 KOH, added drop by drop until a delicate pink color, persisting for one minute is obtained. This titration shows whether the product is basic or acid.

Free Acid:—(Cc. KOH—Cc. H_2SO_4) $\times 0.72$.

Note.—In alum containing small amounts of iron the error is often made if all the iron is considered as being in the ferrous state of oxidation and combined with sulphuric anhydride as ferrous sulphate.

The aluminium sulphate should be calculated from the SO_3 left by subtracting the SO_3 combined as ferrous sulphate and free acid from the total SO_3 as determined above.

POTASSIUM FLUORIDE:—The reagent may be prepared by dissolving 1,000 grammes of potassium fluoride in 1,200 Cc. of hot CO_2 -free water, then neutralizing the solution with alkali or hydrofluoric acid as the case may require using 5 Cc. of phenolphthalein indicator. Dilute sulphuric acid may be used in place of hydrofluoric acid in the final adjustment, to get a neutral product. 1 Cc. of the solution in 10 Cc. of CO_2 -free water should appear a faint pink. The concentrated mix is filtered if necessary, and then diluted to 2,000 Cc. with CO_2 -free water. The gravity will now be approximately 1.32 (about 35 deg. Be.): 1 Cc. contain 0.5 Gm. potassium fluoride salt.

Rosin and Rosin Size.

SAMPLING.—Samples from 10 per cent. of the barrels should be taken and a pound taken from each end of each barrel. Total sample may be crushed and reduced by mixing and quartering to laboratory sample.

GRADE.—Rosin is graded in color and impurities. Grades B,D,E,F,G, being used for paper sizing, F, and G, being generally used.

SAPONIFICATION NUMBER.—Weigh 2 grams of powdered rosin into an Erlenmeyer flask of 300 cc. capacity. Add 25 cc. half normal alcoholic KOH and boil for two hours, using a reflux condenser. Shake the flask frequently with a swirling motion to prevent the rosin from sticking to the sides of the flask above the liquor line. Cool and titrate the excess KOH with half-normal acid and phenolphthalein. Calculate the milligrams KOH consumed per gram of rosin. In each case run a blank on the KOH solution by boiling 25 cc. of the solution in exactly the same manner as the saponification proper is carried out.

ACID NUMBER.—Dissolve one gram of powdered rosin in warm alcohol (neutral to phenolphthalein) cool and titrate the solution with half-normal alcoholic potassium hydroxide, using phenolphthalein. Express the result as milligrams of KOH consumed per gram of rosin. This is the acid number.

ESTER NUMBER.—The ester number is the difference between the saponification number and the acid number.

UNSAAPONIFIABLE MATTER IN ALCOHOLIC SOLUTION.—Saponify 5 grams of rosin by boiling for two hours with excess of half-normal alcoholic potash. Evaporate most of the alcohol, add about 100 cc. of water and extract in a separatory funnel with acid-free ether exactly as in the determination of free rosin.

UNSAAPONIFIABLE MATTER IN AQUEOUS SOLUTION.—“Rosin unsaponifying in aqueous solutions” is determined by boiling 5 grams rosin for four hours in an aqueous solution containing 1 gram sodium carbonate, and then extract as above. This result represents more nearly the rosin which is unacted upon in determining the acid number and is considered to be the unsaponifiable as far as size making purposes are concerned.

SELECTING ROSIN FOR PAPER SIZE.—As rosins are graded by color, they may vary in chemical composition. That rosin which contains the largest percentage of rosin acids, as shown by the acid number is one which shows the least modification or chemical alteration in its production.

As pine oil or turpentine are undesirable constituents for rosin size, and as the value of unsaponifying matter is questionable the acid number would seem to be the best guide in selecting a high grade rosin for paper size.

Rosin Size.

LABORATORY SIZING TESTS.—These tests should only be made using sizing solutions prepared in the same way as those used in the mill. The paper stock must be free from all chemical residues, and then the results will have a relative and not an absolute value.

SOLUBILITY.—The solubility of a paper size should be adjusted to the methods employed for dilution so that perfect solution is maintained in the diluted state.

SAMPLING.—The sample of size solution taken for analysis should be drawn from the dilute storage or measuring tanks after it is prepared ready for use. This sample should be further diluted until it contains approximately 1 per cent. of total solids.

Although the diluted solutions may be somewhat hydrolyzed providing it has been improperly diluted, yet the analysis of it in this condition will more accurately interpret its sizing value, than if the undiluted sample is taken.

TOTAL SOLIDS.—100 cc. is concentrated to solids on a water bath and then dried at 105 deg. C. to constant weight. If dried in a weighed dish containing rod and sand, the drying is greatly facilitated.

INEFFECTIVE FREE ROSIN.—If the diluted solution contains non-reactive or suspended rosin which has a tendency to settle on standing; determine as follows:—

Boil 300 cc. of a 1 per cent. solution for 30 minutes. Filter and wash with hot water, and determine weight of dried residue.

When possible a centrifuge should be used for the elimination and determination of suspended rosin as this should effect a more complete separation.

TOTAL UNSAPONIFIED ROSIN.—Take 100 cc. or the 1 per cent. size solution and extract in a separatory funnel with 50 to 75 cc. acid-free ether without shaking too hard. If difficulty is experienced in breaking up the emulsion, 5 to 10 cc. neutral absolute grain alcohol may be added which will accelerate the separation.

The aqueous solution is drawn off into a second separatory funnel and extracted as above. The aqueous solution is again drawn off and the ether added to the original ether extract.

In all, three ether extracts are then washed three times with 50 cc. distilled water. To the first water washing may be added a little alcohol if necessary.

The last two washings should be allowed to separate without the addition of alcohol.

The washed ether solution is then transferred through the mouth of the separatory funnel to a weighed beaker, or Soxhlet evaporating flask, the separatory funnel washed with 25 cc. ether and added to the original ether solution.

The ether is evaporated and the residue dried to constant weight in the oven at 100 deg. to 105 deg. C.

This residue is calculated to per cent on the basis of dry size.

Note.—It is especially important that the ether used in this determination shall have been specially prepared by washing once with sodium carbonate solution, and then sufficiently with water. It should be tested with a moist piece of sensitive litmus paper, which should not change color when completely submerged in the ether for fifteen minutes.

TOTAL ROSIN.—Take 50 cc. of original size solution into a separatory funnel and acidify with 10 cc. of dilute (1-5) sulphuric acid. Add 50 cc. of ether, shake well and allow to stand until the two layers are completely separated. Draw off and wash the ether with 25 cc. portions of water, drawing off the water into the second funnel and pouring the ether extract into a weighed Soxhlet. Rinse the first funnel with 25 cc. of ether into the second funnel. Shake well and draw off the water layer into the first funnel. Wash as above with two 25 cc. portions of water. Repeat once more. Evaporate the ether from the combined ex-

tracts as in the Free Rosin determination. Dry to constant weight at not over 100 deg. C. Calculate per cent. on dry basis and multiply by 100 to obtain the percentage of combined rosin.

The ether in this case does not need to be specially purified, though it should be as free from any non-volatile residue.

FREE ALKALI.—About 10 gr. of the rosin soap is dissolved in a little water, and shaken in a separatory funnel with sufficient neutral sodium chloride so that a portion of the salt remains undissolved. Opening the stop-cock carefully the solution is allowed to run into a second separatory funnel, the undissolved NaCl thereby serving as a filter. The soap remaining in the first funnel is washed with a saturated solution of neutral sodium chloride, and the wash-solution added to the second funnel. The solution allowed to run into the second separatory funnel contains free alkali, and a little neutral soap, but no free rosin, 80 cc. 1-10 normal acid is added, shaken with ether and the ether-solution as well as the water solution is titrated with 1-10 normal alkali-solution. If *n* cc. alkali is required then the value for free alkali in the soap will be:—

$$80-n \cdot 0.0053 = \text{gr. Sodium Carbonate.}$$

Note.—If it is desired to determine free Alkali in the diluted solution, salt may be added until there is super-saturation, and then proceed as in above method.

Rapid Methods of Mill Control.

First determine "Rosin unsaponifying in aqueous solution" by method already given, or for quicker results this may be taken as representing the rosin which does not saponify on direct titration and obtained by difference thus: total rosin—abietic acid = unsaponifying rosin.

Second.—Determine suspended rosin by one of methods suggested.

Third.—Abietic Acid.—To the warm filtrate from second determination, add an equal volume of neutral absolute grain alcohol and heat to near boiling. Then titrate with 1-5 normal solution of NaOH, using phenolphthalein as indicator.

The result is calculated as Abietic Acid having a combining weight of 336. If free alkali is present this should be determined as NaOH used in titrating for Abietic Acid, in order to determine full amount of Rosin Acids.

Fourth.—Total Rosin Acids.—The solution used for free abietic titration is now partly evaporated to remove alcohol and then precipitated with an excess of half normal H₂SO₄, and the coagulated rosin collected. The solution is then cooled, filtered and titrated back with normal alkali (NaOH). From this the total rosin acids can be determined, and hence by difference the combined rosin acids.

In the sizing solutions there are now determined as follows:

- Unsaponifying Matter.
- Suspended Rosin.
- Abietic Acid combined.
- Abietic Acid uncombined.

From these results the quality of the sizing can be maintained or controlled.

Analytical Method for Bleaching Powder.

SAMPLING.—Upon notification of the arrival of a car, samples should be taken immediately from 5 to 10 per cent. of the casks. The sampling is most easily carried out by driving a three-quarter inch brass

tube through the cask, from end to end, and removing the powder held inside the tube. In this way a 1-quart mason jar will just be filled. This is then sealed and delivered to the laboratory, where the sample is immediately and rapidly quartered down to several ounces and all lumps smashed up fine.

ANALYSIS FOR AVAILABLE CHLORINE.—A sample of from 3 to 5 grammes is weighed, using a weighing bottle, triturated with several portions of water, each portion being washed into 1,000 Cc. volumetric flask and finally the mortar and pestle are washed clean into the flask and the volume made up to the mark.

Fifty to 100 Cc. are then pipetted into 200 to 300 Cc. of water in an Erlenmeyer flask; about 10 Cc. of 15 per cent. potassium iodide solution are added to take care of all chlorine, both free and as hypochlorite, and the whole is then acidified with 5 Cc. of a one in five solution of hydrochloric acid. The free iodine is now titrated with one-tenth normal thiosulphate solution. Calculate per cent. of available chlorine.

For accurate analysis your Committee would recommend the chlorimetric process with arsenious acid as found in Treadwell-Hall, Vol. II., 3rd edition, page 701, as follows. In this method the presence of calcium chlorate has no effect.

THEORY.—On adding arsenious acid to a solution of a hypochlorite the former is oxidized to arsenic acid while the latter is reduced to chloride.



PROCEDURE.—Into a tared weighing-tube about 5 grms. of chloride of lime are introduced and the stoppered tube weighed. Its contents are washed into a porcelain dish, rubbed to a paste by means of a pestle, and then transferred without loss to a 500 cc. measuring-flask, diluted up to the mark with water and well shaken.

Add arsenious acid to the solution of hypochlorite until a drop of the solution added to a piece of iodine-starch paper will cause no blue coloration.

$$\frac{N}{1000 \text{ cc.}} \cdot \text{As}_2\text{O}_3 = 3.546 \text{ grms. chlorine.}$$

This titration is not affected by the presence of chlorates.

Analysis of Salt.

MOISTURE.—The sample (10 grammes) is weighed into a perfectly dry Erlenmeyer flask (250 Cc. capacity) covered by a small funnel, and heated on a sand bath at 140° to 150° Cent. for three to four hours. Water present as "moisture" will be driven off at this temperature. "Chemically combined" water, usually amounting to less than 0.1 per cent., is not driven off appreciably.

(Note.—Final weighing should be made in a stoppered vessel.)

FOREIGN MATTER, NOT INCLUDING FERRIC OXIDE AND ALUMINA.—A one gramme sample is dissolved in dilute hydrochloric acid and foreign matter separated by filtration and washing with hot water.

FERRIC OXIDE AND ALUMINA.—The filtrate from "foreign matter" is then heated to boiling, sufficient NH₄Cl is added to hold MgO in solution, and then NH₄OH until decidedly alkaline, boil, filter, wash with hot water until no reaction for chlorides is obtained; ignite over the blast or Meker and weigh as Fe₂O₃ and Al₂O₃.

CALCIUM.—To this barely alkaline and boiling filtrate add excess ammonium oxalate slowly and allow to boil for several minutes. Filter, wash with hot water containing some ammonium oxalate and ignite the precipitated calcium oxalate (CaC_2O_4) to constant weight, and weigh as CaO ; or wash the CaC_2O_4 precipitate with hot H_2O , return to beaker, add H_2SO_4 (1:9), heat to 90° Cent., and filtrate with KMnO_4 .

MAGNESIUM.—To this filtrate, evaporated until crystallization of salts commences, add Na_2HPO_4 , or ammonium phosphate; let stand fifteen minutes, add dilute NH_4OH equivalent to one-third the volume of the neutralized solution. Allow to stand in the cold, preferably in crushed ice, for several hours. Filter on aluminum crucible, wash with cold ammonia (2 per cent.); ignite at low heat, finally raising to the full heat of the Tirrell burner, Meker burner, or blast. Weigh as $\text{Mg}_2\text{P}_2\text{O}_7$. Magnesium is considered as MgSO_4 , unless not enough SO_4 is present to saturate all CaO and MgO , when the remaining Mg is figured as MgCl_2 .

SULPHATE.—A one gramme sample weighed into a small beaker and dissolved in dilute HCl is diluted to 100 Cc. To the fairly acid and boiling solution, add slowly a 10 per cent. solution of BaCl_2 until no further precipitate is obtained. Continue boiling for a few minutes and filter in an aluminum crucible, washing with water almost at the boiling point until no chloride reaction is obtained with AgNO_3 . Ignite at full heat of the burner for several minutes and weigh as BaSO_4 . Sulphate obtained in excess of that required to satisfy CaO and MgO is considered as Na_2SO_4 .

CILORIDE.—Calculate to Cl . Dissolve 1 gramme in 100 Cc. H_2O , filter off any insoluble residue, wash well, dilute to 200 Cc., add a few drops of HNO_3 , heat to boiling, add excess of 10 per cent. AgNO_3 solution; boil until coagulated, let stand a few minutes, or over night if convenient, filter on aluminum or Gooch crucible, wash with hot water—return filtrate if not clear—dry one hour at 140 to 150° Cent., cool, and weigh as AgCl .

Analytical Method for Lime and Limestone.

SAMPLING.—Immediately after the car has been reported in at the acid plant, the laborer unloading the material should be instructed to reserve one shovelful from every third wheelbarrow when the car is unloaded. This pile is at once crushed, coned and quartered in the proper manner by a laboratory assistant, and a 1-quart mason jar filled, sealed and delivered to the laboratory. This sample should all pass a 5-mesh sieve.

Note.—This sample is further crushed, coned and quartered to several ounces of 50-mesh powder. For the analysis a further grinding in an agate mortar to 80-mesh powder will be sufficient.

ANALYSIS OF SILICA AND INSOLUBLE MATTER.—A one gramme sample is weighed into a small easserole, moistened with 10 Cc. of water and decomposed by the addition of 5 to 10 Cc. of a 1 in 2 solution of HCl and a few drops of HNO_3 , and the whole evaporated to dryness on a steam bath or low temperature electric hot plate. The dry residue is moistened with concentrated HCl , taken up with the least amount of water, heated to complete solution of soluble matter and filtered. One washing of hot water is made, the filtrate and wash water are evaporated to dryness. (Omit dehydrating). The dry residue is again taken up with HCl and hot water,

boiled and filtered through the same paper, washed, and then ignited to constant weight.

FERRIC AND ALUMINUM OXIDES (P_2O_5 , TiO_2 , etc.)—The filtrate from the silica determination (volume about 100 Cc.) is treated with 5 Cc. in excess of the amount of ammonium hydroxide (.90 s.g.) necessary for complete precipitation, the solution boiled and the precipitate just dissolved by the addition of HCl . Ammonium hydroxide is then added in slight excess, the solution boiled until the odor of ammonia is just barely perceptible and filtered hot. The precipitate is washed well with hot water and ignited to constant weight. This figure gives the sum of Fe_2O_3 , Al_2O_3 , Mn_2O_3 , P_2O_5 , TiO_2 , etc.

Notes.—(1) The dissolving of the first precipitate is necessary to produce sufficient NH_4Cl to hold the magnesium salts in solution; (2) the hydroxides may be dissolved and reprecipitated where a very accurate analysis is required, inasmuch as some calcium and magnesium salts may be included in the precipitate. For technical routine work this is hardly necessary.

CALCIUM OXIDE.—The combined filtrate (if a second precipitation is made) is boiled throughout the addition of a hot solution of ammonium oxalate plus a little ammonia, and the boiling continued for five minutes. The beaker is allowed to stand for one hour when the calcium oxalate should settle and filter readily. The precipitate is washed several times with hot water and dissolved with the smallest amount of a 1 in 2 solution of HCl , hot from the wash bottle, the solution being caught in the beaker in which the original precipitation was made. The filter is washed free from chlorides and a little ammonia solution poured over it. The solution is now made alkaline and several Cc. of oxalate added, the whole boiled until the calcium oxalate settles readily, when it is filtered through a fresh paper and washed, not unnecessarily long, with hot water. This precipitate may be ignited and weighed as CaO or may be put into solution with sulphuric acid and the liberated oxalic acid titrated with standard permanganate as follows:

The precipitate of oxalate is rinsed off the paper into a 200 Cc. beaker with hot water and the filter paper further thoroughly washed with hot dilute sulphuric acid. More sulphuric acid is added to the beaker and the whole is warmed until solution is complete. Titration is then made with standard permanganate solution.

Notes.—(1) The double precipitation of calcium is necessary to free the precipitate from small amounts of magnesia and alkali metals; (2) if the CaO is weighed as such, a check weighing is very important as the material is very hygroscopic and there should be as little delay as possible between the completion of ignition and weighing; (3) the permanganate solution is generally kept as a stock standard solution and its strength is known in terms of iron. If this is known, the iron value times .5016 equals the CaO value. This figure is obtained as follows:

$$2\text{KMnO}_4 = 5\text{H}_2\text{C}_2\text{O}_4 = 5\text{CaO} = 10\text{Fe}$$

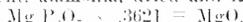
$$\frac{280.4}{559}$$

$$\text{The ratio therefore} = \frac{10}{559} = .01789$$

—Add bromine water, boil, adding more bromine water and ammonia if necessary to insure complete precipitation of the manganese.

MAGNESIUM OXIDE.—This determination is more difficult than any of the preceding, and strict adherence to directions is necessary.

Evaporate the combined filtrates from the CaO determination to a bulk of about 200 Cc. and just acidify with HCl. Then add a considerable excess of microcosmic salt solution. The whole is then boiled for five minutes, cooled, and the excess acid carefully neutralized by the slow addition of dilute ammonium hydroxide with constant stirring. This is best accomplished by using a burette. When the precipitate appears, the addition of ammonia is stopped, but the stirring is continued for some time. After about five minutes the solution is made strongly alkaline with ammonia (10 Cc. conc.) and is allowed to stand over night. The precipitate should always be crystalline and easily filterable if this procedure is carefully followed. The precipitate is washed cold with 2 per cent. ammonia, dried and ignited.



ALKALI METALS. If these are to be determined, which is very seldom the case, in a technical analysis, the method of J. Lawrence Smith should be followed. It is as accurate as any method and much more convenient.

LOSS ON IGNITION.—Ignite a .5 gramme sample to constant weight over a blast lamp or large Meker burner. The loss gives CO₂ plus moisture, plus combined H₂O and organic matter.

CARBON DIOXIDE.—(Note—For the routine analysis of lime and limestone this determination may well be omitted.)—This determination is most easily made, especially on samples of lime, by means of an apparatus consisting of a small flask fitted with a two-hole stopper, through one hole of which a small dropping funnel is inserted, and through the other hole an outlet is made connecting with a small condenser. The condenser in turn discharges into a 100 Cc. flask with a sufficiently large mouth to accommodate a small two-hole stopper. The second hole holds the mouth end of a 10 Cc. pipette, which has the discharge end broken off close to the enlarged portion, and this portion is filled with glass beads held in by a coil of wire placed in the lower end.

Ten Cc. of 50 per cent. KOH solution is placed in the 100 Cc. flask, 1 gramme of the material and a small quantity of water in the boiling flask, hydrochloric acid in the funnel, and the apparatus is then connected up. The acid is run into the flask on the sample until sufficient is present to decompose the carbonate. The CO₂ distills over into the 100 Cc. flask which forces the KOH up into the pipette until the gas bubbles through the beads. In this way the CO₂ is completely absorbed. The solution in the boiling flask is finally boiled for five minutes so that all CO₂ is driven from the apparatus into the receiver.

After distillation is completed, the pipette is partly removed from the receiver and thoroughly washed into the receiver. Water is added to make the volume 100 Cc. in case of limestone and an aliquot part titrated with standard acid. In case of lime, the whole distillate may be titrated. The titration is carried to the disappearance of the red color with phenolphthalein and then to the appearance of the red color with methyl orange, the latter titration indicating the amount of carbon dioxide present.

For very accurate work on lime and limestone, your Committee refers to the method of Hillebrand in his

Analysis of Silicate and Carbonate Rocks, Bulletin 422, United States Geological Survey.

Analysis of Sulphur.

SAMPLING. Portions are taken from a number of points throughout each car of sulphur received so as to give a fair average composition as compared with the carload as a whole. These portions are thoroughly crushed, mixed, quartered, and, if necessary, quartered further until an amount of convenient size for a laboratory sample is obtained. This sample is placed in an airtight glass container and placed with similar samples from other carloads. These samples are preserved until a number equivalent to a "shipment" have been collected.

These samples are then thoroughly mixed and again sampled, ground to a 100-mesh powder and treated as follows:

Note.—Samples for moisture determination should not be ground too fine as moisture is lost in the grinding process.

MOISTURE.—For technical purposes, a 100-gramme sample, though not necessarily as fine as 100-mesh, is weighed into a glass-stoppered weighing bottle, dried first at 70° Cent., and finally at 100° Cent. for a short time. Evidences of sublimation should be noted and avoided. (Several hours in a vacuum desiccator would be better.)

SULPHUR IN SULPHUR.—Two samples weighing one gramme each are weighed out into each of two extraction apparatus (Underwriter's Laboratory pattern) and subjected to the action of carbon disulphide for fifteen minutes. The sulphur itself is thereby dissolved from the small Gooch crucible, leaving only the dirt and other impurities. The crucible is then removed from the apparatus, dried and weighed. Loss = S + moisture.

ASH.—A 10-gramme sample is weighed into a porcelain crucible or dish and carefully burned, the residue constituting the ash.

Coal Analysis.

Your committee recommends the adoption of the Final Report of the Joint Committee of the American Society for Testing Materials and The American Chemical Society as published in the Journal of Industrial and Engineering Chemistry 9 (1917), p. 100-107.

Daily Solutions.

Tenth-normal sodium arsenite.

Tenth-normal iodine.

Hundredth-normal iodine.

Tenth-normal sodium hydroxide.

N 10 SODIUM ARSENITE.—Weigh out on a watch glass 4.95 grammes arsenious acid powder; transfer carefully to a liter beaker. Weigh out on a rough balance twenty grammes anhydrous sodium carbonate and add the arsenous acid. Fill beaker two-thirds full of water and put on a steam bath to dissolve. Finally cool to room temperature and make up to exactly 1,000 Cc.

N 10 IODINE.—Made up from the normal solution which is prepared as follows for each liter: Weigh out on rough scales 162 grammes potassium iodide (free from iodate) in a beaker and add enough water to just cover. Then add 128 grammes of solid iodine flakes and stir, but do not heat to dissolve. When dissolved make up to one liter for use in the following solution:

- Take 100 Cc. of the above and make up to 1,000 Cc.

with water. Titrate against N/10 sodium arsenite, using starch as indicator, adding water or N/1 iodine, depending on whether the new solution proved to be stronger or weaker than tenth normal.

A convenient formula to use in this connection is here given. Use 20 Cc. of the arsenite. When the new solution is found stronger than N/10 add

$$20 \times 1,000$$

—1,000 = Cc. water to add (per liter)
Cc. iodine used
when too weak add

$$20 \times 100$$

100—
Cc. iodine used

$$= \text{Cc. N/1 iodine to}$$

9

add (per liter).

N/100 IODINE.—Take 100 Cc. N/10 iodine and make up to 1,000 Cc. Titrate against standard sodium arsenite (N/100), proceeding with corrections as above.

N/10 SODIUM HYDROXIDE.—This solution, as in the case of the iodine, is made up from N/1 solution, prepared as follows, per liter:

Weight out 122.5 grammes NaOH on rough balance. Dissolve in one liter beaker and finally make up to one liter.

Note. — A normal NaOH solution contains 40 grammes NaOH per liter, hence weigh out about 45 grammes of electrolytic NaOH.

For the N/10 solution take 100 Cc. of the N/1 and make up to 1000. Titrate against standard N/10 H₂SO₄, using phenolphthalein as indicator, and adding water or N/1 NaOH when the solution is either too strong or too weak.

The rule of thumb method indicated for N/10 iodine is also applicable here.

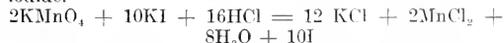
If desired, make the iodine and caustic solutions sixteenth normal instead of tenth normal and use a 2 Cc. sample. This gives per cent. free and total direct on the burette, when testing cooking acid, of course, neglecting specific gravity of the acid.

Solutions deteriorate rapidly and should be made up frequently. Where large quantities are used, they should be made up fresh each day.

Standardizing Sodium Thiosulphate by Potassium Permanganate.

Your Committee recommend the use of Potassium Permanganate for standardizing sodium thiosulphate, as found in Treadwell-Hall, Volume II., 3rd edition, page 648, reading as follows:

THEORY.—On adding potassium permanganate solution to an acid solution containing potassium iodide the permanganate is reduced to manganous salt, while an equivalent amount of iodine is set free from the iodide.



PROCEDURE.—One or two grammes of pure potassium iodide are placed in a beaker, dissolved in as little water as possible, and to this 5 cc. of hydrochloric acid (1:5), and then 20-25 cc. of potassium permanganate solution are added (never in the reverse order). Iodine is liberated immediately and quantitatively. After diluting with 200 cc. of distilled water the iodine is titrated with the sodium thiosulphate until a pale yellow color. Now 2 or 3 Cc. of starch solution are added and the solution carefully titrated until it becomes colorless.

From the normality of the permanganate solution the normality of sodium thiosulphate can be calculated.

Testing Cooking Acid.

TESTING ACID CALCIUM BISULPHITE SOLUTIONS (COOKING ACID).—Many methods of testing cooking liquor have been proposed, some having the advantage of extreme brevity and low accuracy, others being more accurate, but too long and involved for technical purposes.

The method proposed is a mean between these two and while not giving strictly accurate results is quick and does give results accurate enough to furnish sufficient control over the manufacture and use of the cooking solution. It is the method used in a great many American sulphite mills.

One Cc. of the acid, taken with a pipette, is diluted immediately by being placed in about 200 Cc. clear cold water. Using starch solution as indicator, it is immediately titrated with tenth normal iodine.

A second Cc. sample prepared as above is titrated with tenth normal caustic soda, using phenolphthalein as an indicator. Multiplying the Cc. of iodine solution used by .0032 gives grammes SO₂ in one Cc. of the cooking acid. Disregarding the specific gravity of the acid, this product is taken immediately as the total per cent. of SO₂ in the cooking acid.

In the same way is calculated the per cent. of free SO₂.

Subtracting the per cent. free from the per cent. total gives the per cent. combined.

Dividing the per cent. free by the per cent. total gives the per cent. free of total.

Starch and Starch Products.

Starch is used in the paper industry for four purposes: (1) Engine sizing; (2) tub sizing; (3) pasting; and (4) coating.

It is necessary to divide starch and starch products into two main classes, with a method of analysis for each class. The first to be known as raw starch and to include all starches which have not been treated in any other way than by the purifying methods used in their manufacture. The second to be known as converted starches with subclasses. The method of sampling for all kinds of starch products to be the same, and to be embodied as part of the method of analysis.

SAMPLING.—Ten bags or barrels are taken from different parts of a car. These are sampled by means of a 1-inch tryer 12 inches long. One filling of the tryer is to be taken from each bag or barrel. Samples so obtained are mixed, bottled and sealed in three jars, one for each party to the transaction, and one for reference. For smaller deliveries than a car-load 10 per cent at least of the bags or barrels should be sampled.

PRELIMINARY EXAMINATION.—Raw Starch: (a) Spread out 100 grams of the sample on a sheet of white glazed paper, and examine for foreign material.

(b) Mix this sample with 500 Cc. of water to a smooth cream and strain through a 200-mesh silk bolting cloth. Compare residue on silk with standard sample of the same grade, treated in the same manner, at the same time.

(c) Stir filtrate from above for two seconds with a circular motion, and let stand thirty seconds. Decant carefully and compare residue with a standard

sample of the same grade of starch, treated in the same manner, at the same time.

MOISTURE—Dry approximately 5 grams to constant weight at 100° Cent. Loss in weight is calculated as moisture.

ASH. Weigh out 1 gram of the sample; transfer to a platinum crucible; ignite to constant weight.

ACIDITY—Weigh out 20 grams on a watchglass. Transfer to a 250 Cc. porcelain dish. Add approximately 200 Cc. of water, and stir until starch forms a smooth cream. Titrate with N 10 Caustic Soda, using phenolphthalein as indicator until a faint pink color persists for twenty seconds.

ALKALINITY—Method is same as for acidity, except that sample should be titrated with N 10 Sulphuric Acid until the pink coloration just disappears.

TEST FOR THE PRESENCE OF ALKALINE STARCH OR ALKALI—Add a few drops of phenolphthalein solution to water in a white porcelain dish; sprinkle in a little of the dry sample. If some of the grains turn pink it indicates that the sample is a mixture of raw starch and alkaline starch or alkali. If all the particles turn pink the material is an alkaline finished starch.

VISCOSITY—Take 12 grams of the sample in 300 Cc. of water, bring to boil, then boil for ten minutes with constant stirring, in an aluminum beaker over a naked flame. Determine viscosity at 100° Cent. with 200 Cc. of the liquid in a Scott viscosimeter, standardized as below. Express result as a ratio. Scott starch viscosity

$$\frac{\text{Scott starch viscosity}}{\text{Scott water viscosity}} = \text{Viscosity number.}$$

Scott water viscosity

The standardization of the Scott viscosimeter is as follows:

Calibrate the Scott viscosimeter to hold 200 Cc. of water at 100° Cent.

Determine viscosity on first 50 Cc. withdrawn.

Converted Starches.

Owing to the number and variety of the products on the market, their classification is a matter of some difficulty. The method of conversion, however, may be used as a means, and thus the following classes can be arranged:

(1) Thin boiling starch, mainly used for tub sizing, converted by treatment with weak acid solutions by the "in suspension" or "drying in" process.

(2) Partly dextrinized starches, and dextrins, made by dumping the starch with small quantities of acid, and converting at a high temperature by the dry process.

(3) Oxidized starches.

(4) Acetylated starches.

(5) Alkali-treated starches, including products consisting of raw starch mixed with certain quantities of various alkalis and alkaline salts.

(6) Mixtures of starch products and mineral fillers.

(7) Mixture of starch products with glue and casein or other sizing agents.

(8) Products in solution or paste form.

SAMPLING, MOISTURE AND ASH are the same as for raw starch.

ACIDITY AND ALKALINITY—First method same as for raw starch.

TOTAL ACIDITY—Mix 10 grams of the sample in 200 Cc. of water and heat on a water bath for five minutes after reaching 75° Cent.; cool and titrate. This gives the acidity within the starch granule.

VISCOSITY—In determining viscosity the starches are divided into three classes:

(a) Low boiling, or laundry starch; (b) medium thin boiling; (c) high thin boiling, with a decrease in viscosity from (a) to (c).

For (a) the viscosity should be determined in a 10 per cent. solution; for (b) in a 20 per cent. solution; for (c) in a 30 per cent. solution. Otherwise the method is the same as for raw starch.

ADDED MATERIALS—These are tested for by the ordinary methods used in separating and identifying mineral fillers, metallic salts, glue, casein, and other vegetable sizes.

The identification of the product in relation to the classification of the process of manufacture involves a more exhaustive analysis, including:

(1) The identification of the starch by microscopic observation.

(2) Combined acid to determine the degree of acetylation of the product.

(3) Solubility in cold water and reaction with Fehling's solution, which gives a measure of the degree to which the starch has been hydrolyzed and dextrinized.

(4) Color reaction with iodine and other agents.

(5) **TECHNICAL VALUATION**—Character of Size. A sample of the starch product is mixed with four or five times its weight of water, and heated on a water bath for at least twenty minutes after swelling.

(a) Portions of the size are allowed to cool, and the time of settling observed. This gives a figure for the permanency of the solution.

(b) A little of the size is rubbed out on paper and allowed to dry, when the surface and finish produced is observed.

(c) The solution is run out on a clean glass plate to a thin layer and allowed to dry at room temperature. Film produced is examined and compared with, say, a gelatin film for physical characters.

SIZING STRENGTH—For paper coating the size is prepared under the proper conditions for the particular product and mixed with definite quantities of clay or other filler. A series of samples is made up at graduated strengths according to the proportions used in practice, and samples of paper are coated by color obtained.

The sizing power of the sample is determined, in comparison with other sizing materials, treated in the same manner, at the same time, by noting the resistance to spirit varnish, or by using the sealing wax test and others. In most cases both for coating and tub sizing, the most accurate and reliable results are only obtainable by a working trial under standard conditions.

Soda Ash.

SAMPLING—Five per cent of the bags, or barrels, in the shipment should be sampled by means of a sampling auger in the usual manner.

MOISTURE—Heat a carefully weighed amount of the soda ash in a covered platinum crucible to constant weight. The heating should be so regulated that the bottom of the crucible when viewed in subdued light shows a very faint trace of color.

ALKALINITY—Weigh 5 grams of the soda ash on a watchglass, transfer to a beaker, and dissolve in about 300 Cc. of water. Transfer to a 500 Cc. graduated flask, cool, and make up to the mark. After thorough agitation, pipette 100 Cc. in to a beaker

and titrate with standard acid, using methyl orange as the indicator.

Calculate the per cent. of Na_2CO_3 on the dry soda ash.

Sulphuric Acid.

SAMPLING—Contents of carboy should be well mixed before sampling.

SPECIFIC GRAVITY—Determine the specific gravity by means of standard hydrometer.

SEDIMENT—A portion of the acid should be taken immediately after agitation and set aside in a tall glass cylinder to settle. The amount of sediment should be noted.

ACIDITY—Run 50 grams of the acid into a beaker containing 200 Cc. cold distilled water; transfer to a 1,000 Cc. graduated flask when cooled to room temperature. Make up to the mark with distilled water and mix well. Draw out 100 Cc. of this acid by means of a pipette and make up to 500 Cc. with distilled water in a graduated flask. Draw out 50 Cc. of this acid (equal to 0.5 Gm. of the original sample) in a beaker and titrate with standard alkali, using methyl orange as the indicator. Calculate per cent. H_2SO_4 in sample.

IRON—Determine colorimetrically by the method given in the procedure for the analysis of aluminum sulphate.

Caustic Soda.

SAMPLING—Break open the drum, crack off clean pieces and place them in air-tight fruit jars. The pieces should be crushed and ground as rapidly as possible in the laboratory and samples preserved in an air-tight jar or rubber-stoppered bottle.

ALKALINITY—Fill a glass-stoppered weighing tube with a portion of the sample and weigh approximately 1 gram of the sample in a 350 Cc. beaker. The caustic soda is then dissolved in about 200 Cc. water, titrated first with standard acid and phenolphthalein as the indicator, and then completed by titrating for total alkali with methyl orange as the indicator.

The titration with phenolphthalein gives the acid consumed by the NaOH and half the Na_2CO_3 . The second titration gives the acid consumed by the remaining half of the sodium carbonate.

*Twice the reading obtained with methyl orange corresponds with the amount of carbonate present. The difference between the two titrations corresponds to the amount of hydroxide.

Note—If through damage of the drum in transportation the caustic soda has absorbed a considerable amount of moisture, the following procedure should be used:

Sample as above. Determine the alkalinity on the dry basis by weighing approximately 1 gram of the sample in a tared, covered silver crucible, heat to fusion and until all moisture is driven off. Cool in dessicator and weigh. The weighed, dry sample is then dissolved in about 200 Cc. water and procedure followed as above.

Water Analysis.

As found in "Standard Methods for the Examination of Water and Sewage." Third Edition. Revised by the Committees of the American Public Health As-

*This paragraph is substituted by the Canadian committee in the report of the American committee as printed in "Paper," Oct. 14, 1916.

sociation, American Chemical Society and referees of the Association of Official Agricultural Chemistry, 1917. Also adopted by the Society of Chemical Industry—Montreal Section.

SCHEDULE OF EVENTS FOR T. S. MEN.

The Ritz-Carlton Hotel will be the mecca of Technical Section men next week. A number of interesting addresses will be given in what some one said is appropriately called the Bawl Room. The session begins on Thursday with the business meeting which is of unusual importance and continues until Friday morning, so as to permit of a visit to the Montreal Technical School. The Technical Section will welcome as representatives of the Technical Association, Messrs. T. J. Keenan, R. B. Wolf, G. E. Williamson and M. L. Griffin. The program is as follows—it is necessary that events proceed promptly, according to schedule:

Thursday, 30th January, 1919.

9.30 a.m.—BUSINESS MEETING. Ball Room.

Address of Chairman.

Minutes of previous meeting.

Secretary-Treasurer's Report.

REPORT OF COMMITTEES

Committee on Programme, Mr. O. Rolland.

Committee on Education, Mr. T. Linsey Crossley.

Committee on Testing Moisture in Pulp, Mr. E. B. Slaek.

Committee on Abstracts and Publications, Mr. J. N. Stephenson.

Committee on Mechanical Standards, Mr. John Stadler.

Committee on Statistics, Mr. S. L. Burns.

Committee on Samples, Mr. A. L. Dawe.

Advisory Committee to Forest Products Laboratory of Canada, Mr. C. B. Thorne.

New Business.

Proposal of Motion re Student Membership.

Election of Officers.

Paper by Dr. V. K. Kriehle, Department of Chemistry, McGill University, Montreal—"Canadian Waste Sulphite Liquor as a possible source of Alcohol."

Paper by Dr. A. E. Nielson, Chicago—"The Morterud System of Indirect Cooking as Applied to Sulphite Pulp."

1.00 p.m.—LUNCHEON IN GRILL-ROOM.

2.30 p.m.—MEETING IN BALL-ROOM.

Paper by Mr. C. F. Buss, Provincial Paper Mills—"Waste Paper Stock and Some of the Difficulties in this branch of Paper Making."

Paper by Mr. John Stadler—"The Application of Electrical Power in Pulp and Paper Mills."

Paper by Mrs. E. B. Wardle—"The Distribution of Electrical Power in Pulp and Paper Mills."

Moving Pictures of Power Plants, taken by U. S. Coal Administration, shown by courtesy of Mr. R. E. Cleaton, Montreal.

8.30 p.m.—INFORMAL "SMOKER," Grill-Room.

Friday, 31st January, 1919.

10.00 a.m.—The Members of the Section are invited by Mr. A. Macheras, Principal of the Montreal Technical School to pay a visit at which time Mr. J. Newell Stephenson has promised to read a paper on "The Pulp and Paper Industry and its place in the period of readjustment."

1.30 p.m.—LUNCHEON OF THE CANADIAN PULP AND PAPER ASSOCIATION.

7.30 p.m.—SIXTH ANNUAL DINNER OF CANADIAN PULP & PAPER ASSOCIATION.

ELECTRICAL EQUIPMENT OF THE AMERICAN BOX BOARD COMPANY.

A thoroughly modern, electrically operated paper-box-board mill is that of the American Box Board Co., Grand Rapids, Mich. Electric power is generated by two 750-kilovoltampere Westinghouse three-phase 440-volt, 60-cycle alternating-current turbine-generators, one of which is of the straight non-condensing type, while the other is designed for condensing operation with provision for bleeding low-pressure steam for heating and drying. Each of these two generators has a direct-connected exciter, but there is also a 25-kilowatt Westinghouse direct-current geared turbine driven unit installed for use as an auxiliary exciter and for lighting mill at night or on Sundays.

Eight 1500-pound beaters are driven in pairs by four 150-horsepower 435 r.p.m. Westinghouse wound-rotor motors. These motors each have double shaft extension with two pulleys, and they are belted to the

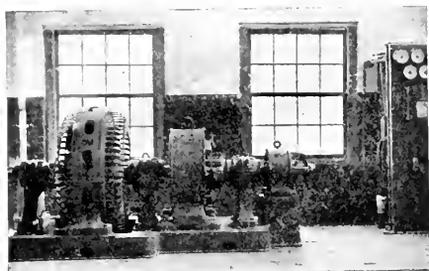


Fig. 1—106610—100-Kw. Synchronous Westinghouse Motor-Generator Supplying Power to 100 H.p. Adjustable-Speed Direct-Current Motor Driving Paper Machine. The Synchronous Motor of This Set Has Excess Capacity Available for Power-Factor Correction.

beaters through lenix drive. Each motor is controlled from a panel on which is mounted a drum type controller, an oil circuit-breaker, and an ammeter for indicating the load carried by the motor. The coil circuit-breaker and drum controller are mechanically interlocked so that it is impossible to start the motor except with all of the resistance in the rotor circuit. The direction of rotation of the beater rolls may be reversed when necessary, by means of a double throw knife switch on the motor control panels.

Four Jordans are direct-connected through flexible couplings to 125-horsepower 385-r.p.m. Westinghouse

squirrel-cage motors with which panel-mounted auto-starters are used. Each control equipment includes an ammeter and a double-throw knife switch for operating the motor in either direction. Squirrel-cage motors are used for driving warmers, stock pumps, and agitators. An interesting part of this mill is the Westinghouse equipment for operating the 114-inch trim five-cylinder board machine. Belted to the variable speed end of the board machine is a 100-horsepower 250-volt, direct-current motor which has a speed range of from 237 to 950-r.p.m. Power for this motor is supplied by a 100-kilowatt motor-generator, the synchronous motor of which is rated at 300-kilovoltamperes. This motor was made larger than necessary to merely drive the generator, in order that its fields might be over excited to improve the power factor of the alternating-current system. On the shaft of the motor-generator is mounted an exciter which excites the field of the alternating and direct-current ends of the set and also the field of the 100-horsepower adjustable-speed paper-machine motor.

This 100-horsepower motor is controlled by an automatic motor-operated controller which provides for starting and stopping the machine or speeding up or slowing down, from a push-button station located in the machine room, or from a push-button station located on the control panel installed in the basement adjacent to the motor.

A unique feature of this entire installation is that each machine is a unit in itself; that is, it is driven by an individual motor independently controlled, and the amount of power in actual use is indicated by an ammeter on a panel board near the motor.

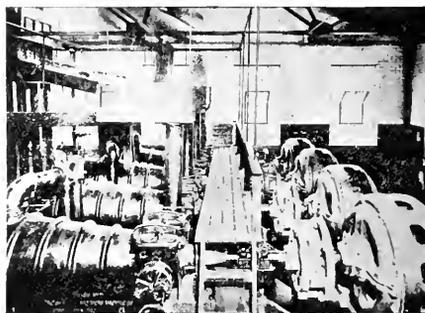


Fig. 2—111089—Four 125 H.p. 385 R.p.m. Squirrel-Cage Westinghouse Induction Motors Driving Shartle Bros. Jordans.

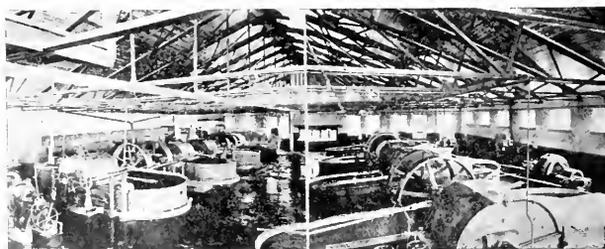


Fig. 3—113717—One Side of Beater Room Showing 150 H.P. Wound-Rotor Westinghouse Motors Driving Beaters in Paris.

Making Men Like their Jobs

(Continued from page 66.)

Unless There is an Opportunity for Expression.

The word dissipate is significant when applied to man. If this relief is not provided, the accumulated pressure will build up until the whole plant will explode and destroy itself, and in so doing may destroy and injure many other useful devices which have been laboriously created by man.

The employer who dams up the channels to useful constructive work by preventing intelligent (conscious) self-expression of the individual workman, is just as sensible as the engineer who shuts off his main steam valve to the engine and then sits on the safety valve of the boiler. The laws of nature are destined to operate always in the same way, and if a man willfully disobeys them, they will break him. "Ignorance of the law is no excuse," for an all-wise Providence (the universal principle of unity) gave to man the power to work with or against the natural law, and therefore was compelled to predetermine the exact operation of this law, which science designates as the law of evolution.

All of this is for man's benefit, however, for nature serves him in proportion to his knowledge and intelligent use of her laws. If they change from day to day, he could not increase his knowledge, and then, indeed, our condition would be hopeless.

As previously indicated, the higher creative power in man is a mental process and lies in his intelligent adaptation of means to ends; he does not create matter or force, the universal energies so graphically depicted by Dr. Dushman (quoted above), but he does by study or conscious observation of the laws underlying these natural phenomena, learn how nature works.

Through the use of his memory—the faculty of recalling past experience for the purpose of solving the problem immediately confronting—he can tell what to do if he wants to produce (create) combinations of natural elements that do not occur spontaneously in nature—this is what the horticulturist does. He studies nature's laws in action and then works with them. It is the specializing power of the will of man that literally created the wonderful, juicy apple of to-day. The uncultivated apple orchard, however, reverts to its original wild state, when this originating, choosing, and adapting faculty of man is removed. "Nature unaided fails" is a world old proverb, the proof of which modern science is bringing home to us to-day.

How the Men Found an Answer to One Problem.

Take a different kind of illustration from the wood pulp industry. Some years ago the men who cooked our digesters, in which the wood is disintegrated, observed the natural law that if we increased the strength of the cooking acid, we would be able to decrease the cooking time. This information, because of the unity of our plant organization, came to the attention of the men in the acid plant, who began to study the operation of the laws governing the absorption of sulphur dioxide gas in water.

The acid makers, who had records of past experience before them, recalled the fact that in winter the acid was stronger than in summer. From this we reasoned that we could create, by artificial means, the

low temperatures in our acid-absorbing system that we had in winter, we would be able to maintain a uniformly strong acid all the year around. Knowing that natural laws never change, we were able to prophesy ahead what would happen if we reduced these temperatures, and, what is more important, we were able to figure out just what size refrigerating plant to install to reproduce the winter conditions.

What we actually did because of this knowledge of natural law, was to re-create the whole acid-making process, and the refrigerating plant we installed — while it cost us nearly \$60,000—was paid for by the increased productiveness of the pulp mill in a period of less than 90 days!

These illustrations will show what I mean by the creative power of the intellect, and how, while man does not create material substance, he does actually create combinations of material substances which did not exist and which could not exist without the aid of his powers of observation and selection. Unless we accept the illogical premise that man's only mission in life is to reproduce his kind, we cannot fail to see that his creative power must have another outlet. What other outlet is there than that of mental creation—just described?

Before leaving the diagram to give more specific illustrations as to how creative power can be released in the individual workman, look at the striking analogy to the whole human body. I am well aware that direct comparisons to the human body are apt to be "farfetched," but this is not the case when we compare principle only. (Chart printed last week.)

The whole supply division refers to what is taken in by the aid of the special senses. Purchasing corresponds to the complete digestive apparatus; transporting to the blood stream and its attendant vascular system which transports the food to the place where it is finally stored up in the cells which form the body—the storing function.

Production—How it Corresponds to Human Functions.

The production aspect of the organization refers to the arrangement or organization of these body cells into differentiated parts. Equipping, which has to do with plant structure or design, corresponds to the main body structure, such as head, arms, legs, skeleton; fabrication, which has to do with internal arrangements within the buildings, such as boilers, engines, digesters, machine tools, corresponds with the internal body organs, such as stomach, lungs, heart, kidneys, whose functionings form the internal individualized activities of the body; and evaluation to the whole glandular system, the secretions from which give vitality to the individual. Without these vitalizing and humanizing glandular secretions it would be impossible for the man to produce that which it is his particular mission in life to produce.

Referring now to administration which, of course, corresponds to the nervous system in its entirety, we see that compensation corresponds to the sympathetic system which permeates the entire body. It is concentric with evaluation, and because of this fact is enabled to adjudge values in accordance with actual performance. In a very real sense it keeps a proper evaluation or balancing of body activities.

Similarly, if we are to keep a vital flow of creative fluid in our industrial organization we must, after a proper evaluation of work performed by the individuals of which it is composed, see to the determination of the proper financial compensation for services rendered. When men feel they are not being treated fairly they cannot be expected to put enthusiasm into their work. Naturally then, under conditions of improper evaluation of performance (for the purpose of arriving at just compensation) the amount of constructive, creative power will be automatically reduced.

The next branch of administration, finance, whose function has been previously described, of course corresponds to the brain or cortical system, where all resultant records are kept. The conscious contact of man (the individual life) with the universal life is through the brain; so also is the conscious contact of the industrial organization with the world of commerce and industry through the financial department.

Finally, the planning function of the administration nervous system corresponds to the central or spinal nerves whose particular function is the control of internal individualized operations. The reason for its connection with the purchasing function of the supply division is obvious.

Now, we return to man's place in the organization into which he must consciously fit himself if he is to co-operate in its perfection. We must first remember that the whole diagram symbolizes humanity in action. And while all the activities are human, we are concerned mostly with the production division, as here is where the least opportunity for creative work exists as industry to-day is in the main constituted. The executives as a rule have plenty of opportunity to express their individuality in creative work, as do those in charge of the supply division, although in a lesser degree. But in the production divisions, where by far the larger number of men are employed, the creative work is largely confined to the superintendents and department heads, and even these men are in all too many cases limited in their activities by the red tape imposed by those higher up.

How "Red Tape" Originated—and the Harm it May Do.

In any individual plant red tape is usually the result of the over-development of administrative power, which makes rules and regulations preventing the spontaneous self-expression of the individual.

It may also result—in fact often does result—from over-emphasizing the power of the supply division, especially the purchasing department section, which frequently fails to recognize that efficient operation depends on the operating department receiving those materials which they know from experience to give the best results.

Or, if the production divisions are given too much authority, and have not sufficient intelligent information about the relative value of the materials, they may through mere prejudice tie the hands of the supply division, so that it cannot properly serve the organization. Red tape from this latter source, however, is much less apt to cause trouble than the over-development of the administration or supply divisions, for the practical operator being close to the work of conversion has more first-hand information as to his material requirements, and he, of all others, should be given the greatest freedom of choice and selection.

Obviously, the remedy for red tape lies in increasing each man's consciousness of his place in the organ-

ization, so that instead of selfishly reaching out for more power to rule or exploit others he will direct his energies to creating a department which will render the greatest possible amount of service to the organization. We might call this enlightened self-interest, for naturally the greater the service the greater the reward.

The Greatest Leader is the Greatest Servant.

This fact can not be too strongly emphasized. The greatest man in the organization is undoubtedly the one to whom the greatest number of men look for intelligent leadership. He is therefore the greatest servant.

The organization having the greatest creative power is the one in which administration, supply, and production are all equally developed functions, as represented by the equilateral triangle within the circle, pictured on page 66, which symbolizes the unified field of activity of the whole organization.

Now proceed to the actual illustrations of how in our mills we were able to work out with our men the kind of progress records which enabled them to know what they were accomplishing. This work was done in direct co-operation with our men, and it is significant that their sympathetic interest in the work came from a realization that it meant greater opportunity to use their brain power, and more chance, therefore, for individual development.

While we have many other progress records, the one which I will illustrate is typical, and will serve to show the methods.* For those who may feel that such records are applicable only to a continuous process, let me say that in the maintenance and construction department, where we had about 300 men at work, we kept everyone informed as to his progress by giving cost records of all jobs done, not only labor costs, but complete material costs, as well.

These records were furnished daily, and while we did not pay bonuses of any kind, not even to superintendents or department heads, we actually cut the maintenance material costs in two by the greater thought of economy released in the organization. We are installing these job costs and department cost sheets now in our mills in Canada, for we know that the only way to produce the greatest possible amount of the finest quality of paper at the lowest cost a ton is to give the maximum amount of intelligent information to the largest number of men.

*The best example of this type of organization in the country is in the mill of the Fletcher Paper Company, at Alpena, Michigan. The clear vision and fine spirit of Mr. Henry E. Fletcher, the general manager and treasurer, is responsible for its development. It has been my privilege to be associated with Mr. Fletcher in some work for the United States government recently, and I wish to take this opportunity to acknowledge his assistance in presenting this subject, especially in the classification of the three divisions of organization.

(To be continued.)

The fourth annual meeting of the Technical Association of the Pulp and Paper Industry will be held in connection with the annual meeting of the American Paper and Pulp Association, February 3 to 6, 1919, at the Waldorf-Astoria, New York.

IMPORTANT FOREST LEGISLATION IN NEW BRUNSWICK.

Through the representation made by Clyde Leavitt, Chief Forester for the Conservation Commission, and the very active interest of the Deputy Minister, Col. T. G. Loggie and Hon. E. A. Smith, a new Forest Act was passed, and the Forest Fires Act revised during the last session of the legislature. These two acts comprise the most advanced piece of legislation concerning forest protection on the continent.

The Forest Act provides for a Crown Land Advisory Board composed of the Minister of Lands and Mines, Deputy Minister, Provincial Forester and two others; one elected by the Crown Land licensees and one chosen by the Minister to represent the granted forest land owners. This advisory board has the power to make all permanent appointments and to supervise all matters in relation to the Forest Act.

It provides for a sufficient fund to carry on the administration of the Crown lands, for the division of the province into districts, and for the appointment of forest rangers by competitive examination on a merit basis for these districts. The rangers' duties include fire protection, sealing and the protection of game.

The examination for forest rangers consisted of a written test on fire protection and sealing, an oral test and an actual scale of a large number of logs. The examination was modeled after the U. S. Forest Service examinations and worked out fairly well to all concerned.

The Board of examiners consisted of the Provincial Forester as Chairman, one expert scaler, and one practical lumberman and woodsman.

It is interesting to note that 152 men wrote the examination, that 76 passed and that the appointments of rangers and inspectors to the thirty-six districts in the province have been practically completed from the pass list irrespective of any political influence or patronage.

Moreover, it is the aim of the present Minister of Lands and Mines to keep the administration of his department entirely free from politics and to build up a permanent organization on a strictly merit basis.

Through the continued co-operation of the New Brunswick Government and Railway Commission, the work of fire protection along the right of way was continued with beneficial results, and it is worthy to note that both the Provincial Inspector and his assistants for the Railway Commission are university graduates in forestry. It was the first year that systematic locomotive inspection was carried out by the inspectors in New Brunswick.

The co-operation between the New Brunswick Government and the Canadian Government Railways was much improved. The concession of the General Manager of this Railway to the New Brunswick Government's inspectors to examine their locomotives for fire protective appliances resulted in considerable improvement in the fire situation; nevertheless it is felt that much better results can be obtained if the Canadian Government Railways were placed under the jurisdiction of the Railway Commission of Canada.

Much credit is due to the Canadian Forestry Association for the interest taken in the progress of forestry in this province especially so in the distribution of propaganda relative to fire protection and legislation. Through co-operation with the Dominion Forestry Branch, this Association had Mr. Doucet give a

series of lectures on fire protection in northern New Brunswick. The operation of a demonstration car in conjunction with a series of illustrated lectures in this Province, during the latter part of the season, was the outcome of the Association's activities. The work of this Association is highly appreciated and the Government hopes to continue in co-operation with the Canadian Forestry Association in the future.

In co-operation with the Dominion Branch of Plant Pathology the Government obtained the services of Professor R. B. Miller, Dean of U. N. B. Forest School for part of the time, and his investigation study of plant and tree diseases are of the greatest importance.

Mr. Tothill of the Dominion Entomological Staff has continued his investigations of the spruce bud-worm in this province. Mr. Swain spent nearly a month on areas in New Brunswick infested with the bud-worm, making a study of the bark beetle and wood borer that follow in the wake of the pest.

IMPORTANT CONFERENCE HELD IN MONTREAL.

An important meeting of the Book and Writing Section of the Canadian Paper Trade Association with the manufacturers was held in Montreal on January 15 at the Ritz-Carlton hotel. There was a large attendance from Montreal as well as a liberal representation from Toronto. The object of the gathering was to discuss and consider a number of questions of moment, arising out of the changes in conditions due to the cessation of the war, between the mill representatives and the wholesalers. R. S. Waldie, President of the Toronto Paper Mfg. Co., presided and many important questions were taken up.

A resolution was carried to the effect that the meeting believes that closer co-operation should obtain between the makers and distributors of paper with a view that Canadian papers only should be as largely as possible employed for Canadian business.

It was also decided that the trade custom of giving two per cent discount to printers should be continued. The proposal to have prices named and guaranteed for three months ahead was not favorably received at present in view of the many changing conditions during the process of reconstruction. Definite action was taken in determining what constituted a case of paper.

Permanent committees were appointed to confer between manufacturers and jobbers in exchanging views with respect to trade customs of mutual interest. The paper manufacturers entertained the dealers at luncheon in the vice-regal suite of the Ritz-Carlton and in the evening the Montreal jobbers tendered a dinner to the visiting delegates at the St. James Club, which function was much enjoyed. It is understood that the membership of the Association is growing rapidly and the prospects of a successful year's usefulness and activity are bright. N. L. Martin, secretary of the association, reports that the book and writing section of the organization is now well organized.

ACCIDENTS IN ONE MILL COST \$3,000.

In one of the best managed mills in Quebec there were 75 accidents in twelve months, causing a total loss of time of 1,010 days. The average number of employers working was 1,290 and the injured men lost an average of 13.3 days. The total loss in wages was \$2,996.20, an average of \$39.42 per man injured. Of this loss, \$997.98 was recovered by accident compensation, or \$13.13 each on the average.

ENGINEERING ITEMS.

(Selected from Industrial Management, October and November, 1918.)

A-16, M-4. Notes on babbitt and babbitted bearings. Jesse L. Jones, Ills. 7 pp. A.M.E.E., Bull., Aug., 1918. Experiments carried out in the chemical laboratory of the Westinghouse Electric and Manufacturing Co., Pittsburgh, Pa.

R-0. Research and the industries. P. G. Nutting, 2,500w. Sci. M.-Aug., 1918. Value of industrial research and the training needed.

R-0. Research association. 3,000w. Engr.-June 28, 1918. Examines the question of their organization and principles.

M-5. Oxy-acetylene welding. George B. Malone, 8 pp. Prof. Mem.—July-Aug., 1918. Properties of oxygen, and of acetylene, etc.

N-4. CO₂ Recorders in the boiler house. John B. C. Kershaw, Ills. 3,500w. Engr. July 19, 1918. Serial, 1st part. Detailed description of automatic gas-testing apparatus for recording CO₂ percentages.

N-7. Canada's water powers: Their relation to the fuel situation. J. B. Challies, Ills. 1,200w. Pr. House-July, 1918. Shows the need of a national fuel-power policy for the development and use of the fuel resources of the Dominion.

N-4. The maintenance of economy in the boiler house. D. Wilson, 4,000w. Electn.-June 28, 1918. Importance of keeping records of performance; sampling and testing of coal, etc.

N-5. Storing Coal in a small plant. Ills. 1,500 w. Elec. Wld.-July 27, 1918. A flexible system of portable conveyors is tied in with modern coal handling equipment.

N-6. Recent developments in condensers. D. W. R. Morgan, Ills. 2,000 w. Elec. Wld.-Aug. 3, 1918. Relative advantages of steam air ejectors and hydraulic and reciprocating air pumps.

N-6. Steam condensers. J. H. Coates, 4,500 w. Natl. Engr.-Aug., 1918. The two general types and their applications.

N-6. Cooling of condensing water by towers and spraying. E. W. Marriott, 1,800 w. Comwh. Engr.-July, 1918. Abstract of paper before Engng. Assn. of N.S.W. The two plants are described and the amount of cooling given.

N-4. Sawdust and wood burning. Ills. 5,000 w. Pwr. Pt. Eng. Aug. 15, 1918. A symposium dealing with furnace designs, conditions to maintain, conveying and storage systems, etc.

O-3. International water softener. Ills. 1,200 w. Power, July 30, 1918. Detailed description of apparatus.

N-9. Motor drive in paper and pulp mills. C. E. Clewell, Ills. 1,800 w. Elec. Wld. July 27, 1918. Serial, 1st part. Important applications; variation in power requirements; examples.

R-0. National physical laboratory. 2,600 w. Times Engng Supp. Aug., 1918. Variety of work and results attained during the past year.

N-6. A new system of regenerative evaporation. William L. DeBaugre, Ills. 3,000 w. A.S.M.E.E., JI, Sept., 1918. Brief description of the system with tests.

N-4. Measuring the temperature of gases in boiler settings. Henry Kreisinger and J. F. Barkley, 60 pp. U.S. Bur. Mines, Bul. 145. Information as to the accuracy of temperature measurements made under certain conditions and the corrections that can be safely applied.

M-4. Saving coal by efficient pulleys. Charles H. Machen, Ills. 2,000 w. Am. Mach. Sept. 19, 1918. Discusses loss due to belt slip.

N-4. The effect upon fuel economy of different arrangements of baffles in boiler tubes. William G. Eager, Ills. 5,000 w. A.S.M.E.E., JI, Sept., 1918. Report of tests made on three Heine boilers.

N-4. Blower for water-tube boiler plant at Bristol Electricity Works. Ills. and plate, 600 w. Engng. Aug. 2, 1918. Detailed descriptions.

N-4. Boiler-room management plan. T. N. Wynne, 2,500 w. Elec. Wld. Sept. 21, 1918. Great saving by the investment in trained men and adequate instruments.

N-4. Boiler repairs. A. D. Palmer, Ills. 2,200 w. Pwr. Pt. Eng. Sept. 1, 1918. Methods of patching a boiler.

N-4. Steam boiler regulations and control. Albert A. Straub. Charts & Ills. 2,000 w. Power. Sept. 24, 1918. Importance of proper handling of the damper for controlling the draft.

N-4. New data on boiler walls. J. Crow Taylor, 1,200 w. Natl. Engr. Sept., 1918. Experiments indicate that an air space is not as good an insulator as a solid wall.

N-4. Clinkering: its causes and prevention. M. A. Saller, 1,200 w. Power. Sept. 3, 1918. Can usually be avoided by carrying a thin fire; firing in small charges; avoiding stirring fire; and extinguishing live coals falling through the grate.

N-0. The use of lignite, bagasse and wood waste for power generation and other purposes. John B. C. Kershaw, Ills. 3,500 w. Engr. Aug., 9, 1918.

N-4. Wool fuel. Albert A. Cary, 1,800 w. Natl. Engr. Sept., 1918. Examples of successful wood-burning furnaces.

N-4. Boiler tube scale; its removal with kerosene as practiced at the Fuel Oil Testing Plant. Albert M. Penn, Ills. 1,800 w. Am. Soc. Nav. Engrs. JI, Aug., 1918. Successful method.

M-9. Driving power required by conveyers of various types. R. F. Muirhead, 2,500 w. Cas. Eng. Mthly. Aug., 1918. Power required to transport material between given terminals and power consumption.

HYMAC.

Once in a while the Editor gets way down in the East End and looks in on the Hydraulic Machinery Co. Last week we had that pleasure and visited B. C. Root a happy and prosperous New Year. "B. C." said not to worry about that but just take a look at the shop. It certainly was a busy place, making everything in the way of hydraulic machinery from valves to pumps, presses and wet machines. They are building an 84 inch, 54 dryer, single vat, pulp drying machine, using an entirely new mode of construction. There are three nests of 18 dryers, each consisting of two vertical stacks of 9 dryers each, hung on 24" steel I-beams. The whole structure is rivetted after the manner of bridgework. S. K. F. ball bearings will be used on the press rolls.

Mr. Root also has a hand-organ—the mean House-Organ—called the Pulp Press. It sounded over the phone like "punk" press but that adjective does not apply to either the press or the publication. Of course, it is sugar coated advertising, and it is getting business. The word "Hymac" is taken from the firm's name and is fully registered as the trade mark for their whole line of presses, pumps, bronze and other mill equipment.

PULP AND PAPER NEWS

A charter has been granted to the Matheson Lumber Co., Limited, with headquarters at Matheson, Ont., and a capital stock of \$40,000. The new organization is authorized to carry on the business as timber merchants, saw mill proprietors, pulpwood dealers and to manipulate, export and import timber and wood of all kinds and deal in timber limits and concessions.

A charter has been granted to Papers, Limited, with headquarters in Toronto and a capital stock of \$250,000 to underwrite, purchase or otherwise acquire and hold and to transfer, assign or deal in bonds, stocks, shares, etc.; to assist in the promotion, organization and development of any corporation or company and to raise money for and to aid same by way of bonus, loan, guarantee of bonds, etc., and to offer for public subscription shares, stocks, bonds, etc. Among the incorporators are Grant Cooper, James H. Spence, and Thomas B. Farrell, of Toronto.

It has been decided by the Toronto Board of Health to ask the city council to authorize the publication of the monthly health bulletin which was discontinued last year owing to the high cost of paper. It is felt that the bulletin, edited by Dr. Hastings, M. O. H., is an essential in health education and performs a specific work in the community.

It is stated that the sulphite plant of the Nashwaak Pulp and Paper Co., now located at St. John, N.B., may be removed to Marysville in order to be nearer the timber limits of the company and to secure an adequate water supply. A fixed assessment has been asked from Marysville and other concessions. Hon. N. M. Jones, President of the Company, recently interviewed the town council of Marysville and if new buildings are erected in the latter place, they will cost about \$400,000. The equipment of the company would be removed from St. John.

Sergt. Fred Lehan, of Toronto, who is well known to the paper trade, has returned from overseas. He was in all the principal engagements in France and was wounded once and gassed a couple of times. He has resumed his former position on the travelling staff of the Rateliff Paper Co., Toronto.

C. H. Fetherstonhaugh, manager of J. C. Wilson, Limited, Montreal, was in Toronto last week calling upon the trade. Among other visitors during the week were Sofus Christiernsen, representing the Oldham Rope and Twine Co., Oldham, Eng., and J. Smith, representing the Chelsea Fibre Mills, Chelsea, N. Y.

G. A. Browne, formerly with the Interlake Tissue Mills, Limited, Toronto, who enlisted a year ago for overseas service, is now associated with Charles Mitchell, wholesale paper dealer, 49 Wellington street east, Toronto.

F. L. Rateliff, President of the Rateliff Paper Co., Toronto, and wife left this week for Florida, where they will spend the remainder of the winter.

Frank Rolph, of Rolph, Clark, Stone, Limited, Toronto, who has been Chairman of the Canadian War Mission at Washington since Lloyd Harris went overseas, has returned to Toronto. Owing to the removal

of many war trade restrictions on the transaction of business between Canada and the United States it is unnecessary for several members of the mission to remain.

It is possible that the Baptist Book Room, Toronto, may be closed in the not far distant future; as the profits have been steadily decreasing owing to the keen competition of the departmental stores. It is said that none of the book rooms of the various religious denominations are making money at the present time.

Dr. J. A. Macdonald, former editor of the Toronto Globe, who recently returned after a year and a half in Japan, is spending some time at Battle Creek Sanitarium. The Imperial University of Japan has asked Dr. Macdonald to deliver a series of lectures on international political affairs.

Brigadier-General J. B. White, of Montreal, who directed the work of the Canadian Forestry Corps in France and is home on three months leave of absence, spent a few days in Toronto last week. General White is well known to the pulp and paper trade through his connection as manager of the woods department of the Riordon Pulp and Paper Co., and the Kipawa Fibre Company.

H. R. McMillan, who is now with the Imperial Munitions Board of Canada, but was formerly head of the British Columbia forestry service, was one of the leading speakers at the second annual red cedar congress held last week in Seattle, Wash.

Lieut.-Col. Thomas Gibson, of Toronto, who is secretary of the Spanish River Pulp and Paper Mills, has been appointed to the Disposal Board, which will look after the disposal of military stores in London, England. Col. Gibson went overseas as a Major in the 168th Battalion, which was recruited in Oxford county, and in January, 1918, was awarded the D. S. O.

David Williams, publisher of the Collingwood Bulletin and secretary of the Collingwood Board of Trade, was a member of a deputation which waited upon Hon. Dr. Cody, Minister of Education in Toronto during the past week requesting the erection of a Technical School in Collingwood, which would serve the counties of Simcoe, Dufferin and the Island of Manitoulin. The Minister of Education assured the deputation that he would consider their claim in carrying out his province-wide plan of technical education.

Ed. P. Foley, of the Foley-Rieger Pulp and Paper Co., Thorold, has been elected President of the Thorold Board of Trade and Dan Daverin, superintendent of the Montrose plant of the Provincial Paper Mills Co., has been chosen as Vice-President. They are both live-wire officers and are going after a new post office building for Thorold and other improvements.

Mr. W. J. Van Dusen, who for the past few months has been associated with the Imperial Munitions Board, with headquarters at Prince Rupert, will be able to return to his former post as district forester at Vancouver now that the aeroplane spruce logging operations have been closed down.

The Rainy River Pulp and Paper Co., Port Mellon, B.C., is getting on well with their improvements. Production is increasing daily and will reach 30 tons per day within a week or two.

Messrs. Backus, Steadman and Meyer, of International Falls, Minn., were recent visitors at Bathurst, N. B.

Mr. P. L. Lyford, of Clark & Lyford, Ltd., forest engineers and timber factors, Vancouver, left November 27th for the East on a business trip in the interest of the firm. Mr. Lyford, who will be absent about two months, will interview prominent timber owners and capitalists in Chicago, Buffalo, Toronto, Boston, New York, Philadelphia and Washington, and will return via New Orleans and San Francisco.

H. A. Vernet, who was employed in the sulphite department, at Grand Mere for a short time, has been made superintendent of the sulphite department of the Toronto Paper Manufacturing Company's plant at Cornwall, Ontario.

Things are moving along at the Bathurst Lumber Company's pulp mill. A new economizer has been installed, which is expected to save at least 10 per cent of present coal consumption. The sulphite mill is making over 50 tons a day. This will be increased to 60 tons with the installation of 14 new dryers next month.

The Michigan Tag Company, whose indebtedness is said to be \$33,000, announces that it expects to be in a position to pay its creditors a substantial dividend upon their claims if permitted to continue as a going concern with the grant of a reasonable extension of time to meet payments.

During the twelve months ending November, 1918, Canada imported paper to the value of \$8,053,291. The exports for the same period included: printing paper, 12,814,709 cwt., worth \$37,190,410; other paper worth \$6,030,710; woodpulp, 11,495,064 cwt., worth \$32,580,619. Practically all of this is the product of Canadian woods, yet we exported unmanufactured wood to the value of \$30,580,619, about one-third of which was pulpwood. The total value of pulp and paper as given was \$75,811,739.

MODEL VILLAGE AT CRABTREE MILLS.

The Howard Smith Paper Mills, Limited, who are now turning out about twenty-five tons a day of Progress bond at the Crabtree Mills division, report that the new equipment is working perfectly and that the plant has come up to their most sanguine expectations. The company are building at this point a village and will have about fifty comfortable dwellings for their employees as well as a small hotel and a club house. A great part of this work has already been carried out and the remainder will be completed during the present year.

At Beauharnois, the capacity of the plant will be doubled. The equipment for rag handling is all in and most of the finishing room installations. The new machine, which is 88 inches wide and is being built in Canada, will be running by July next. The Beauharnois mill was built for a two machine mill in the beginning and it was the intention of the company to install the second unit long before this but, owing to the impossibility of procuring the machine, they could not do so.

Speaking of the prospects of the market for high grade papers, C. Howard Smith, President of the Company, declared that he considers the export busi-

ness good. They have been successful in exporting quite a lot of high grade papers and these have given satisfaction to customers abroad. Repeat orders are now coming and providing there is no unfavorable legislation, the company feel that they can compete with the foreigner for export business. In regard to the trend of prices, Mr. Smith adds that it is impossible to say what will be the figure in the future. Personally, he believes that quotations will be maintained at the present level for a long time to come. The raw material market has not shown any appreciable reduction and the increased freight rates have materially raised the cost of paper. In high grade papers there are approximately four tons of material brought into a mill for one ton shipped out. The augmented freight rates are no light matter. Added to this is the high cost of labor, which does not show any tendency to drop.

BIG PROJECT URGED FOR NORTHERN ONTARIO.

A large project was urged upon the federal government during the past week when a deputation waited upon the Cabinet at Ottawa urging the canalization of the French river between Georgian Bay and Lake Nipissing. Among the speakers on behalf of the project was Mayor McCoubrey, of Iroquois Falls, representing the Abitibi Power and Paper Co., and A. J. Young, of the Young Lumber Co., North Bay. It was stated that the proposed canalization would cost in the neighborhood of \$16,000,000 or annual interest charges of \$720,000 at four and a half per cent. These interest charges, it was contended, would be met by an estimated revenue of \$750,000 per annum from water powers. It was also pointed out that the total cost of canalization would be liquidated in eighteen years by additional customs receipts due to increased traffic. The saving in freight rates by the shorter route available would in four years meet the cost of construction. Hon. F. B. Carvell, Minister of Public Works, referred to the importance of the project and promised that the question would be submitted to the government as a whole and given careful consideration. At the same time he pointed out that settling the war bills would be a heavy drain on the finances of Canada and only the most necessary public works could be undertaken and carried out during the next few years.

PULPWOOD COSTING VERY MUCH MORE.

George R. Gray, Sault Ste. Marie, Ont., woods manager for the Spanish River Pulp and Paper Mills, was in Toronto on business the past week. He reports that the company are taking out about 250,000 cords of pulpwood during the present season which will be ample to supply their three plants. The cost of logging is going steadily up and pulpwood is costing more than ever. The company buys up large supplies from the settlers and also secures huge quantities through contractors. The release of men from the munition plants and the army came too late to materially affect the labor situation this season although help is now more plentiful than it has been for some time. The increased cost of pulpwood is due to higher wages in the camps, as much as seventy-five dollars a month and board being paid. Supplies keep up in price and hay shows an advance of one hundred per cent over last year. Transportation charges are also much heavier.

THE MARKETS

CANADIAN MARKETS.

Toronto, January 20.—Trade is opening up very well in the paper line and good reports are now heard from jobbers. Deliveries are very much better than they have been for months past and mills are catching up with their orders. It will be remembered that a year ago everything on the railways was stalled, congestion existed at many points while there were embargoes aplenty. Coal was very scarce and some mills got down as low as forty-eight hours' supply. This season all is changed and there is abundance of coal. Of course, freight charges are high, but little complaint is heard on that score.

Many jobbing houses could have done a larger turnover than they did in 1918, had they been able to secure deliveries. As a result of the tie-up in the mills a considerable amount of business had to be cancelled. The outlook on the whole is promising and there is little fear of any price cutting—at least for the present. It looks as if the paper trade will come through the period of transition from a war basis to a peace footing with comparatively small disturbances. One wholesaler stated this week that the feeling, which had existed in his own mind and that of several of his customers regarding quotations coming down is vanishing and things are now taking on a steadier tone. By this it is not meant that business is rushing, but there is an optimistic atmosphere and some firms have increased the number of their travellers in view of the excellent prospects. The satisfactory statements presented by the banks at their annual meetings and the hopeful character of the general situation expressed by general managers and presidents of financial institutions have done much to strengthen the minds of the faltering and the halting ones. Business should be good if all stand firm, is the slogan sounded and so far there has been no panic in any branch of the industry.

Board factories are catching up with orders and are now only three or four weeks behind in their deliveries. They report that inquiries are coming in quite plentifully and the prospects for an active season are exceptionally bright. There is no change in the general sulphite situation with the exception that prices remain firm and will likely continue to do so until there is a drop in pulpwood prices, which is not expected for several months. Labor will have to come down first in cost before cheaper wood is available

and, until the scale of living descends, there is faint hope of decreased quotations for pulpwood or pulp. It will take several months for affairs to readjust themselves and until such a period arrives there is not likely to be much alteration in the general situation. Groundwood is holding its own and there is a little better demand. Coated paper plants are quite busy and so are envelope factories and mills making special ties. Box factories report trade as fair.

Toilet and tissue mills are still behind in orders and have all the business that they can attend to. In regard to the situation in the newsprint line little can be said until a decision has been handed down at Ottawa by the Appeal Tribunal in connection with the argument which has been going on for some days and is fully reported in another part of this magazine. The whole matter is sub-judice at present and no comment is, therefore, permissible.

But there are other features in connection with the whole pulp and paper situation which the consuming public little understands. One is that there are four big factors entering into production costs and they are wood, coal, labor and chemicals. There has been a slight decrease in some chemicals, but in none of the other factors has there been any change, nor is there likely to be from present indications for some months. While some lines of paper may eventually come down in price, the old low levels will never be ushered in again, according to the best judgment of the trade. It is now three months since the war closed and there has not been a single drop in the price of paper, which would indicate that the coming year will be a good one. There is a brisk demand for glassine paper in connection with the shipments of food products to Europe, but the quantity made in this country is limited. In the meantime, all the big mills are looking forward anxiously to export business which, if shipping is available, should help to place Canada more prominently than ever on the map. The Canadian mills are in good shape to supply a larger quantity of foreign demands and will do all in their power to build up a strong connection in foreign fields.

The rag and paper market is steadier and there is no further talk of softening prices. It is felt that figures have evidently reached the bottom and the dealers are ready to swing aboard when the trade begins the next ascension, which, it is felt, should be soon. Stocks at the mills are reported to be low and it is

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declared that buyers will soon have to enter the market for supplies. Better prices are then looked for. It is reported that roofing rags are opening up somewhat although at a low figure as a result of a purchasing schedule agreed upon by the Canadian roofing plants recently.

Rags and Paper Stock.

No. 1 white envelope cuttings	\$.4.25
No. 1 soft white shavings	\$.4.00
White Blanks	\$.1.25
Heavy ledger stock	\$.2.35
No. 1 magazine	\$.1.50
No. 1 book stock	\$.1.35
No. 1 new manilas	\$.1.80
No. 1 print manila	\$.1.25
Folded news	\$.1.00
Over Issue	\$.1.15
Kraft	\$.4.00
No. 1 clean mixed papers	.85c.
No. 1 white shirt cuttings	\$.12.00
No. 2 white shirt cuttings	\$.8.25
No. 1 unbleached cotton cuttings	\$.10.25
No. 1 fancy shirt cuttings	\$.9.00
No. 1 blue overall cuttings	\$.9.00
Bleached shoe clip	\$.8.50
Unbleached shoe clip	\$.8.00
White cotton hosiery cuttings	\$.10.00
Light colored hosiery cuttings	\$.8.00
New light flannellette cuttings	\$.9.00
No. 2 white shirt cuttings	\$.8.25
City thirds and blues (repacked)	\$.3.25
Flock and sat'nettes	\$.1.90
Tailor rags	\$.1.80
White lineeys	\$.9.00
Mixed lineeys	\$.4.50

NEW YORK MARKETS.

New York, January 18.—Notwithstanding the slow movement of paper of nearly every grade into consuming and jobbing channels at present, prices on the whole are maintained, which would seem to attest to the fundamental strength of the market. Trading during the current week has undergone little or no improvement over that for a month or more past. Buyers in general have held aloof, excepting, of course, as regards small amounts of paper directly needed, and aside from a slight expansion in the demand from export sources, conditions remain unaltered. Complaint has been expressed by some manufacturers over the dullness of the market, yet the same air of optimism regarding the future has continued to pervade the trade, with trade factors in common feeling that a period of brisk activity lies ahead.

Since the signing of the armistice much speculative talk has been heard relative to future prices on paper. Consumers for the most part have looked for a decline, and it can be said that the way in which the market has held up has proven no little surprise to many. Analyzing the situation, it can be readily seen why prices have been maintained. Production costs have not decreased to any material extent and for this reason alone it is but logical that prices on the finished material have held at close to wartime levels. The four principal factors in production costs of paper are wood, coal, labor and chemicals and other raw stock (note similarity to report from Toronto), named in the order of their importance. Chemicals and rags have eased off in price slightly, but the three other kinds of materials have undergone little or no change

as far as costs go. And indications are that wood, coal and labor will continue in their present expensive position for some time to come.

Newsprint is moving steadily on contract, but there has been no great amount of fresh buying done this week. Publishers as a rule are eking out their contract supplies in such a manner apparently as to preclude the necessity of their purchasing further lots in the open market, while transient trade is narrow. Prices are firm. Book papers are rather easy under the lack of demand. Some mills are reported to be cutting prices slightly in their efforts to secure business, but such action is more of an exception than the rule, and quotations on the whole are maintained. Fine papers are exceedingly quiet. Reports from manufacturing sections are to the effect that most mills are operating slowly, while some are closed down altogether. There has been practically no reduction in prices on bonds, linens and ledgers, and jobbers and consumers are confining their buying for the present solely to what they immediately require. Superfine writing papers are selling at between 19 and 20 cents a pound and the sulphite grades are around 12 cents. Mills are said to have fairly large stocks of writings on hand in readiness for the anticipated active demand later on, and, in view of the fact that these stocks were manufactured under ruling high costs, it seems unlikely that prices will be cut by the holders.

Coarse papers are quiet and comparatively steady in price. Tissues show little change. Government demand for roll tissue continues and this is about the only strong feature in the market. Prices nevertheless are maintained and there is surprisingly little selling pressure in evidence. Boards are in poor demand but prices have gone off no further. In fact, quotations on some grades of board have been advanced a shade over what manufacturers recently were asking. Chip board, which was selling a week or two ago at \$50 per ton, is now generally held at \$52.50. News board is quoted at \$55 to \$60, straw board at \$50 to \$60, and wood pulp board at \$85.

Groundwood:—Demand for mechanically groundwood has been somewhat easier, but the tone of the market is firm and prices remain at previous heights, producers quoting around \$30 per ton for No. 1 pulp freshly ground. The danger of a wood shortage is the strongest factor in the market. There is a sufficient supply for present needs, but grinders lay stress on the probabilities of a scarcity later in the season, and are insistent for the prices quoted on pulp in virtually every selling transaction.

Chemical Pulp:—Quietness also rules in the market for chemical fibres. Fresh demand has been noticeably lacking this week, and some grades of domestic pulp have been unquestionably easier in price. The sagging of quotations, however, has appeared to be due more to the anxiety of some manufacturers to dispose of certain lots of pulp than to any real weakness of the market. Reports have been heard of domestic unbleached sulphite or newsprint quality being offered at \$60 to \$65 a ton at the pulp mill, while easy bleaching sulphite has been available at \$80 and domestic kraft pulp at \$90 to \$95 per ton. Prices on imported pulp rule firm. Importers maintain that they cannot bring supplies across the Atlantic any cheaper than previously, and such pulp as is held unsold on the docks or in store is priced at figures considerably out of relative proportion to those prevailing on domestic and Canadian fibre. There is no nervousness shown

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by manufacturers of and dealers in domestic pulp over competition from foreign quarters during the forthcoming few months. The feeling is general that existing conditions on the other side will act to prevent any sizable shipments to this market at least until after the Baltic is opened up to navigation. Even then, it is argued, the cost of production and the strong demand from European consumers give promise of keeping prices in Scandinavia at heights where pulp cannot be brought to America at a profit.

Rags:—The rag market has been slightly more active this week and prices on some grades have advanced. The low qualities have led in demand, felt manufacturers having been the chief buyers. Indications are that felt paper mills as a class are getting more orders for their product for the moment than any other group of manufacturers in the United States, and this condition has been reflected in the manner in which consumers of roofing rags have inquired for supplies. Sales of No. 1 roofing stock at 2.25¢ a pound, New York, have been noted, while No. 2 packing has commanded 2.10 to 2.15¢. Third and blues also have strengthened in price a bit. Rough packing has sold to mills at 3.00¢ delivered, while dealers have demanded this figure f.o.b. as a minimum for repacked thirds. White rags have shown little change. Scattered sales have been reported, but the aggregate volume of material moving into consuming channels is small. Considerable talk is heard among dealers concerning the scarcity of rags. Doubtless many reports are exaggerated but evidences are not lacking that there is in reality somewhat of a shortage, and there seems no question that prices would quickly rise if consumers should come into the market for more normal amounts of goods.

Paper Stock:—The market for old papers is characterized by a tone of even tenor. Business is moderately active and prices are well maintained, with the tendency in many instances decidedly upward. Stock is not scarce and yet there are no large accumulations apparent in any quarter, and dealers are imbued with confidence regarding the outlook. Low grades are in relatively better demand than the high qualities. Folded news is selling at around 85¢ per hundred pounds f.o.b. New York and No. 1 mixed paper commands in the neighborhood of 60¢, New York. Box board mills are buying these two descriptions with fair regularity and in substantial volume, and complaints are frequently registered regarding the difficulty in locating large tonnages. Dealers and brokers seem hesitant to contract for other than conservative quantities, which would infer that they look for an advance in prices. Shavings are notably steady, with producers asking between 4.50 and 4.75¢ a pound, New York, for No. 1 soft whites and about 5.75¢ for No. 1 hard white shavings. Books have sold at 1.45 to 1.50¢ New York, while No. 1 kraft paper is available at 3.40 f.o.b. New York, and ledger stock at 2.75¢.

Old Rope and Bagging:—The market for old ropes and scrap bagging is in a lifeless condition, and while quotations have undergone little change, the trend is toward lower levels. Important consumers are almost entirely out of the market as buyers, and it is therefore difficult to say just what values are. No. 1 domestic manila rope is available at 5.00¢ a pound, New York, and possibly at weaker figures, while No. 1 scrap bagging is offered at 3.00¢.

PROGRAM OF ANNUAL MEETING COMPLETE.

The sixth annual meeting of the Canadian Pulp and Paper Association will be held at the Ritz-Carlton Hotel, Montreal, on Friday, January 31. It will open at 10 o'clock in the morning with a business meeting and close in the evening with a formal dinner at which the principal guests of honor will be Sir John Willison, Brig.-Gen. J. B. White and George W. Sissons, Jr., president of the American Pulp and Paper Association. It is expected that Henry Wise, attorney for the paper makers in the U. S. investigation will speak at the luncheon.

The meeting promises to be of unusual importance, as considerable attention will be given to a review of the industry's affairs during the past year, including the effects had upon it by Government regulation of newsprint paper; and to a discussion as to how the industry can best be made to serve the country during the readjustment period. Special consideration, it is announced, will be given to the industrial side of the question with a view to bettering the conditions of the mill operatives, woodsmen and other employees. It is estimated that the total number of workers now employed in Canada, including woodsmen, is between 35,000 and 40,000. A general scheme for improving the welfare of these employees is among the tentative objects of the meeting. Mr. F. J. Campbell, manager of the Canada Paper Company and president of the association will preside.

The meeting of the Association proper will be preceded by a meeting of the Technical Section on Thursday, January 30, continuing into the following day. Various addresses of interest to paper makers will be delivered, including one by Dr. V. K. Kriebler, on "Canada Waste Sulphite Liquor as a Possible Source of Alcohol," and another by J. Newell Stephenson on "The Place of the Pulp and Paper Industry in the Readjustment Period." Among the interesting features of the Section's program are motion pictures of power plants taken by the United States Fuel Administration Board and a visit to the Montreal Technical School as the guests of Provincial Machesras.

"BUSINESS AS USUAL" AT BELGO.

In spite of a serious fire at the Belgo-Canadian Pulp and Paper Co., Shawinigan Falls, on January 3, the scene of the disaster has been cleared up and production is going on much as usual. Defective wiring is supposed to have started the blaze, which destroyed the warehouse and stores of paper, pulp and sulphite. The damage was about \$100,000. Fine work was done by the fire fighters to prevent the destruction from being even more extensive.

PAPER MAN ON BANK BOARD.

Alvah Miller, senior member of the firm of H. G. Craig & Company, one of the most important paper firms of New York, and also Vice-President of the St. Regis Paper Company, of New York, N. Y., has been elected a Director of the Harriman National Bank. This institution is located at Fifth Avenue and Forty-fourth street, in which section the pulp and paper trade is now centering. The Harriman National Bank enjoys the unique distinction of having achieved a record percentage of growth, its assets now totalling approximately \$35,000,000. Mr. Miller's wide acquaintance and large knowledge of the industry should make him a valuable member of the Board of Directors of the Bank.

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MANY NEW COMPANIES BEING FORMED.

One of the signs of the coming prosperity is the number of new concerns which are obtaining charters in the lumber, paper and pulpwood line, all getting ready for the period of expansion.

A charter has been granted to the Hampstead Lumber Co., of Hampstead, N.B., to do a general milling, lumber and pulpwood business. Among the incorporators are Wm. L. McAdoo, George R. McKean and W. E. Golding, of St. John, N.B.

The Gravel Lumber Co., Limited, has been granted a federal charter with headquarters in Levis, Que., and a capital stock of \$600,000. Among those interested in the proposition are Sir William Price, Henry Edward Price and Arthur J. Price, of Quebec city, and Alfred S. Gravel and Louis G. Gravel, of Levis. The new organization will take over the business of the A. Gravel Lumber Co., of Levis, and is empowered to acquire, own and operate saw mills, shingle mills and robbing plants, as well as pulp and paper plants and to engage in the manufacture of wood, pulp and paper products, etc.

The Ottawa Valley Lumber Co., with a capital stock of \$50,000, has also been chartered to carry on the business of manufacturers and dealers in logskit timber, ties, paper, pulp and pulpwood. The headquarters of the company are in Montreal.

T. G. McLaurin Co., Montreal, with a capital stock of \$20,000 are empowered to deal in goods of every sort and description and to carry on a lumber trade in all its branches as well as sell and deal in logs, ties, poles, boxes, posts, box board, wall board, pulp, pulpwood, paper and other products.

JENSSEN'S NEW BULLETIN.

The G. D. Jenssen Company, 200 Fifth Avenue, New York, have sent out a very attractive bulletin describing their two-tower acid system, and the Berglund bleaching system, and the Sandberg cooler, which they control in this country. Some excellent photographs of installations are reproduced.

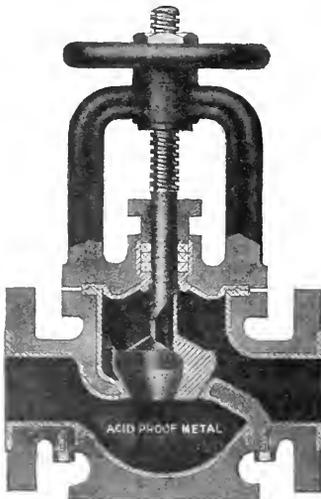
BROMPTON BONDS TO BUY ODELL CO.

Brompton Pulp and Paper Co's annual statement is out. Profits were about \$20,000 less than last year, but dividends on common stock are only 9.1 per cent as against 9.6 a year ago. More is laid away for depreciation. Accompanying the report is notice of an issue of \$1,000,000 20-year 6 per cent general mortgage bonds, authority for which will be asked from shareholders at a meeting on February 4th. The proceeds of the issued will be used to finance the purchase of the Odell Manufacturing Co.

SWEDEN'S PULPWOOD EXPORTS.

During the first seven months of 1918 Sweden exported in round numbers, 99,600 long tons of wet and 33,900 tons of dry mechanical pulp, about 7,000 long tons of bleached sulphite, 16,300 tons wet and 161,200 tons dry unbleached. The "Weekly Bulletin" also gives as sulphite what may be sulphate; bleached 2,000 tons, wet unbleached 770 tons and dry 25,000 tons.

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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Please note correction on page 104 for table in Mr. Stadler's article on costs of motor installation.

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EDITORIAL

LIVING MEMORIALS.

The suggestion is made by "American Forestry" that children be encouraged to plant trees as memorials to the soldiers, sailors and aviators who fell in the great fight. What better way to keep their memory green? At the same time that the graceful or sturdy, but always beautiful, trees add to the glory of the landscape or the beauty of a town they stand a living memorial to our brave dead. The trees, at least in towns, might be named for local men. We trust a similar movement will begin in Canada. We need to keep both landscapes and memories green.

DOMINION POWER BOARD IN ACTION.

As recorded on another page of this magazine, the Dominion Power Board, which was recently organized has already begun activities. The Board has been quietly at work for some months and its effects have already brought about the conference recently held in Ottawa. At this conference there were representatives of both the Dominion and Provincial Departments that are concerned with the administration and development of the water powers of Canada.

There was already the Dominion Water Power Branch and a number of provincial departments which had to do with these important Canadian resources. While considerable harmony has always existed among these various agencies, it is, however, fortunate that an organization has now been perfected which will assure us of definite plans for co-operative effort in the proper development of this important matter. Perhaps one of the most important features of the work of the board will be the evasion of conflicts between the activities of the provincial departments and those of the Dominion Water Power Branch. This is particularly important because the water powers should be developed for the benefit of the people of Canada, whether it be through the work of the Dominion or Provincial authorities.

The development of our water powers is of importance to our people in a number of ways. In the first place the erection of dams and the installation of machinery and the building of mills will employ labor in construction and the operation of the mills will furnish work for other Canadians and the products will supply the needs of our people and probably furnish an excess which can be exported and so help to pay for the various raw materials and articles that must be brought in from other countries. In the second

place the development of our water powers means that they are to be harnessed for industrial work that will be able to pay for their use and by a proper scheme will continually furnish our Governments with income that will increase with the growth of the industrial, municipal, and domestic use of water power and the electricity generated by it.

Such a board, by agreeing on uniform methods of encouraging development and equitable rates of return for the use of power, will be able to check any tendency there may be in some quarters toward giving away power rights in one place and charging too much for them in another. It will be able to adapt the application of power to industries which are appropriate to a particular locality. Such an intelligent application would prevent the absorption of enormous quantities of power in a densely populated section by an industry which employs comparatively few workmen. Such industries as grinding wood, making aluminum or manufacturing carbide are examples in point. These have sometimes been allowed to grow up where an industry such as the textile industry might be more profitably located or where the power could be used for domestic purposes if sufficient were available. The Power Board could use its influence in encouraging the growth of industries close to the raw material. This is particularly feasible with mechanical pulp manufacture because for the most part the supplies of wood are close to the water powers. By putting the plant near the wood and power, long railway hauls of logs would be avoided and the higher class freight on pulp would be available.

Another feature of the work that might be accomplished by the board is the better co-ordination of efforts to measure and record power data. Much duplication could doubtless be eliminated by greater co-operation and a standardizing of tried and approved methods for investigation and report. We recall a statement that the flow of a certain western river was reported from measurements taken in summer without considering the fact that this was the highest volume on account of the melting of glaciers which feed the head waters. Accurate plans for the improvements of water powers on such a river could, of course, not be made because this information would probably be taken by most people as the minimum stream flow because measured in summer time, not knowing all the circumstances. Another point that should have the attention of the Board is the relation between the stripping of hill-sides in lumbering operations and the

uniformity of stream flow. By a proper co-ordination of forestry and power branches, at least in this respect, we might expect to avoid any worse flood conditions than we have at present and in time we might even see an improvement in this matter.

We expect much good to be accomplished by the Board and congratulate them on the good start that has been made.

STUFF FOR MAKING PAPER.

"Clippings from the collar factories contribute importantly to the supply of raw material for making high-grade paper. It is just an instance of waste-elimination.

Asbestos makes an excellent paper, which, being fireproof, might recommend itself highly for deeds and other valuable documents. But, unfortunately, no process has been discovered by which paper of this material can be made that has a smooth, hard surface to take ink from a pen without blurring. The inventor who solves this puzzle has a fortune awaiting him.

There will never be a real paper famine, because paper can be made out of almost anything vegetable. It has been manufactured from banana leaves, pineapple leaves, beanstalks, cabbage-stalks, cat-tails, hay, thistle-down and even mummy wrappings.

Sugar-cane refuse makes good paper; cotton stalks likewise. Of these materials incalculable quantities are thrown away annually. Rice straw and flax stalks are available for the same purpose; also the wild hemp that grows over vast areas in the South-west.

Wheat straw, rye straw, oat straw and barley straw make first-class newspaper and printing paper. In this country we produce enough of such material to supply the whole world with paper.

There are always plenty of rags for making high-grade papers. Why, then, all the recent fuss and rising prices? No reason at all except that we have not yet learned to utilize the available raw materials, which, once turned to proper account, will render it unnecessary to draw upon the forests for pulp."

The words of wisdom (?) in the preceding paragraphs are taken from the Buffalo "Courier." Here is a fine mixture of truth and incomplete information that may be distinctly misleading. The writer of it entirely disregards the economic aspects of the case. To read it casually, one would think he need only put a paper machine behind the barn, much as he would set up an ensilage cutter, and feed in corn-stalks, hay or straw to make paper. The character of the fibre is not considered, as in the case of asbestos, nor is mention made of more important uses, as of sugar-cane refuse for making straw. What a ridiculous idea to suggest that a mill could run on thistle down, economically supplied. Perhaps the writer is Scotch.

Straw certainly makes good paper of certain grades, usually in admixture with other fibres, but the supply must be adequate, available and economical. A paper mill is not a "one-horse" proposition in these days. It is true that we have not yet put much available waste material to proper use, but it is not this failure that keeps up the price of paper. It is prim-

arily the price of labor, and it is this which makes the economical use of many waste materials impracticable. The mere fact of this existence of waste materials has no bearing on prices of paper or protection of forests—the point that counts is the cost of getting them in sufficient quantities to the mill and the cost of converting them into paper for which there is a demand.

INVESTING PUBLIC MONEY IN FUTURE

Practical forestry is being presented as a line of work to interest returned soldiers who have grown to love an outdoor life. War-time needs have caused a tremendous drain on the timber resources of all countries that have been engaged in the great conflict. An unprecedented amount of planting, thinning, and actual lumbering should be done during the next few years. Many states own timberland. Massachusetts, for example, has five state forests, and its forester sees a remarkable opportunity to serve both the State and its soldiers in operating them. Incidentally, the Legislature will have to provide a large amount of money to finance these operations, but few lawmakers will care to balk at warranted appropriations when the "boys" come home.—Christian Science Monitor.

"Back to Mufti" is the new name of the "Bulletin," which is issued by the Department of Soldiers Civil Re-Establishment, Ottawa. The new monthly will be improved in quality and appearance. The old mailing list has been cancelled and "Back to Mufti" will be sent only to those who make direct application for it. For reasons of economy and on account of the paper shortage, it is necessary that no superfluous copies be printed.

At the hearing in Ottawa, in referring to Adam as a "going concern," Mr. Phillips didn't say how Adam went, nor how much concern there was about it.

"During the year 1917 Argentina imported sacking for grain bags to the value of 4,110,000 gold pesos, twine for sewing bags worth 1,000,000 gold pesos, and binder twine to a value of 4,600,000 pesos," says U. S. Consul General W. Henry Robertson, Buenos Aires. Here is a chance for yarn and twine from Canadian kraft paper.

Through an oversight we neglected to mention in our last issue that the "Standard Methods of Analysis" published as the methods approved by the Committee on Standards were, with two exceptions, reprinted from "Paper," New York. The method for rosin and rosin size was specially prepared by the committee, and the method for sulphate of alumina was reported to the Technical Section by the committee in 1916.

AMPLEY EQUIPPED.

"I see Henry Ford is going to start a newspaper."
"Does he know anything about running a newspaper?"

"Must know a heap. I notice he waited until he got \$40,000,000 before arranging to run one."—Louisville Courier-Journal.

Making Work Attractive

By ROBERT B. WOLF, M. E., Manager Spanish River Pulp and Paper Mills, Ltd.

(Continued from page 86.)

In previous installments of Mr. Wolf's article, which we began reprinting from *System in the Pulp and Paper Magazine* for January 9, the author considers the more general aspects of the philosophy of work and the organization of industry. In this and the next installments, Mr. Wolf explains how to apply the principles evolved to the paper industry and shows some of the excellent results obtained. It will be noted that development of the idea is still in progress, which is a most hopeful sign.—Edit.

Charles M. Schwab said in a recent interview:

"I know something about making steel, but I don't any where near as much as the millions of steel workers know. No man can know as much as the crowd knows. No one can do as much as the crowd can do. The real leader is not the man who substitutes his own will and his own brain for the will and intelligence of the crowd, but the one who releases the energies within the crowd so that the will of the crowd can be expressed."

When Mr. Schwab used the word "crowd" he did not mean mob. He recognizes that the crowd is composed of individuals, and that the problem of management is therefore how to release through organized effort the greatest possible amount of individual intelligence. The mass man can find expression only through the unit man, and just as the intelligence of an organization is but the sum of the intelligences of its individual members, so is the intelligence of humanity as a whole but the sum of the intelligences of the individuals composing it.

I will now illustrate the method of keeping progress records on our paper machines. The publishers are very particular about the weight of the paper. A ream to be satisfactory should weigh exactly 32 pounds. Paper that is lighter is apt to cause breaks in the press room. If it runs heavier the paper cost for each edition will be high. Furthermore, if the paper is very dry it becomes brittle, and is apt to break.

The dryness, too, prevents the paper from taking a good finish. As a result, the surface will "fuzz" up and fine particles will come off on the printing press and cause trouble by filling up the type and meshes in the cuts.

In the ordinary course of events the publisher sends his complaint in to the sales office, where it is passed on to the manager's office. The matter is then taken up with the superintendent, and he passes the "kick" along to the boss machine tender. It finally reaches the machine tender, or back tender, or any member of the machine crew who is responsible. This process has to be repeated constantly in order to maintain a uniform quality of paper.

Obviously, therefore, the trouble was due to lack of interest upon the part of the men operating the machines in keeping the operating conditions where they should be. This lack of interest came largely from a lack of knowledge as to what the conditions actually were. We determined, therefore, that more samples should be taken, to give the machine crews more continuous information.

The usual method is for the back tender to take a

sample of paper every time a reel is changed, weigh it, and let the machine tender know the result. The machine tender then turns on or shuts off stock, according to whether the sample is heavy or light. A sample from the front, middle, and back of the sheet is taken occasionally, but, as a rule, not as often as it should be, largely because the men have not the time.

From previous experience we knew that the problem was to produce a desire upon the part of the machine crew to get the required results, so we put on each shift a man (one for every two paper machines) to take samples every time a reel was changed from the front, middle and back of the sheet, these three samples being weighed and recorded, as shown in the reel record on page 100.

These forms are kept in the machine room at the end of the paper machine. While the sample testers are instructed in the work by the Research Department, they are controlled by the boss machine tender and are largely recruited from the machine crews. In our mills they are members of the labor unions.

How Employers Can Interest Employees in Their Work.

There is no thought in the minds of our men, therefore, that this is a follow-up system designed to enable the management to find fault with the workmen. They recognize it as a system to help them to get information which they have not had time to get for themselves, and which they must have in order to do their work intelligently. In other words, we were recording the facts which enabled the operators to recognize the natural laws underlying the process.

The notes on the reel record shown explain fully how this record is kept, so no further explanation is necessary, except to say that the suggestions regarding the moisture test in addition to the weight came from one of the international officers of the Paper Makers' Union. It has proven to be a great help, for previously the only way the back tender could tell anything about the moisture content of the sheet was to "feel" it as it passed from the calendar stack to the reel.

Of course, no record of this "feel" could be made to enable the back tender to tell how well this work was being done, so there was no particular reason why he should be interested in this part of his work. It is only the exceptional man who had imagination enough to create within himself a consciousness of his progress.

The intelligent interest that men in all departments take in creating better operating conditions, when encouraged through the progress records to do so, it seems to me demonstrates conclusively that the employer has everything to gain and nothing to lose by making his industry thoroughly democratic. The attitude of secrecy is repugnant to a free people, for it savors too much of exploitation. With everything open and above board there can be no feeling of mutual suspicion and distrust.

I believe we have failed to recognize the curative properties of knowledge and truth. Just as darkness cannot exist in the presence of light, so ignorance and prejudice cannot exist when met by frankness and co-operation.

REEL RECORD

Tour No. <u>1</u>		Machine No. <u>1</u>		Machine Tender <u>WAITE</u>		Date <u>OCT 15</u>		191 <u>7</u>																
Time	Reel	Uniformity Record			Weight of Samples					Total Weight		Weight Record		Percent Moisture		Moisture Record		Pop Test						
		1	2	Average	1	2	3	4	5	Reel	Average for Day	Reel Record	Average Record	Poll	Reel	Average	Reel	Average	Test	Reel	Average			
8:20	1	30.0	30.0	30.0	30.75	24.00	24.11	24.50	21.50	24.00	29	50	29	50	50.0	500	74.0	74.0	6.5	6.5	42.5	42.5	27	35
9:05	2	70.0	80.0	65.0	33.25	32.50	34.25	30.50	30.00	31.50	33	33	31	41	124.0	62.0	74.0	74.0	8.0	6.5	100.0	67.5	47	38
9:40	3	70.0	100.0	85.0	30.75	30.00	30.00	29.00	28.00	28.00	29	29	31	02	190.0	63.3	64.0	64.0	7.0	7.0	222.5	74.2	57	52
10:19	4	100.0	50.0	75.0	30.25	24.00	30.25	28.50	28.50	28.50	29	29	30	73	246.0	61.5	56.0	56.0	6.7	6.7	270.0	67.5	54	53
11:53	5	70.0	70.0	80.0	30.75	30.75	30.00	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.5	6.5	317.5	63.5	50	52
11:35	6	50.0	80.0	65.0	32.25	31.25	30.75	28.50	28.50	28.50	31	31	30	93	422.0	70.3	92.0	92.0	6.1	6.1	370.0	61.7	48	31
12:20	7	100.0	50.0	75.0	32.25	31.00	30.75	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.5	6.5	370.0	61.7	50	52
12:55	8	90.0	80.0	85.0	31.75	31.00	31.50	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.6	6.6	555.0	65.0	50	52
1:35	9	90.0	90.0	70.0	30.25	30.75	30.50	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.6	6.6	522.5	64.7	50	52
2:15	10	70.0	80.0	75.0	30.75	31.50	32.00	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.5	6.5	370.0	61.7	50	52
2:55	11	70.0	80.0	75.0	31.75	32.00	32.50	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.7	6.7	470.0	66.4	50	52
3:30	12	60.0	70.0	75.0	31.75	30.50	30.75	28.50	28.50	28.50	31	31	30	82	330.0	66.0	84.0	84.0	6.6	6.6	777.5	64.8	50	52
		Total 905.0																						
		Ave. 75.4																						

A CHECK THAT HELPS

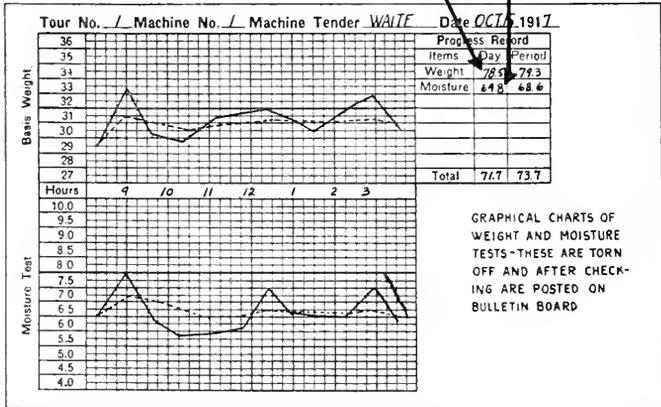
Constant records of variations in the product enabled the men to discover the means of making both product and process more uniform. These forms were used in paper making, and the principles apply in other lines of manufacturing

The employer is an individual, generally a very strong character. I believe, however, that his usual disregard for the individuality of the workman comes largely from the fact that he has been so engrossed in the task of creating an efficient organization to express his own individuality that he has entirely overlooked the fact that in the creation of this thing he has forgotten to extend the same privilege to his employees. If he only stops to think of it he will recognize at once that he cannot hope to get the initiative of the workman except by giving him a similar privilege of seeing his own creations grow, either by leaving the impress of his personality upon the article produced or upon the progress record of his work.

The workman has combined against the employer in order to obtain the freedom which he sees steadily being taken away from him, as industry tends more

and more to make automatons of men; and the unfortunate part of it all is that he has accepted in all too many cases the premise that this tendency is logical and, therefore, inevitable.

Probably the reason the average employer is opposed to labor unions is that he is afraid that the restrictions which he thinks the unions seek to impose will take away his own opportunity for self-expression by preventing him from working out his problems in his own way.



GRAPHICAL CHARTS OF WEIGHT AND MOISTURE TESTS—THESE ARE TORN OFF AND AFTER CHECKING ARE POSTED ON BULLETIN BOARD

Furthermore, if the unions can demonstrate, as they have in our plants, that this fear is unfounded, but that on the contrary their united co-operative effort helps to develop esprit de corps, would not this antagonism on the part of the employer disappear?

The progressive improvements shown in the charts in this and the next installment indicate clearly the increasing interest in the work, and how completely the man has become the master of the machine. That this improvement is due to increasing interest alone is borne out by the fact that we do not pay a man more money for a good record, but pay the prevailing union scale for all positions in our plants. These are adjusted each spring by joint conferences with our men. In this way we keep a proper wage balance between the different classes of work in proportion to the skill required, and as a consequence avoid all the innumerable system, task and bonus plan, and other direct payment methods.

It is often argued that it is not right to pay a good man the same rate as a poor man and to this I absolutely agree; but the fact is that when these progress records are furnished to men, all men in a certain operating class finally come to be practically equal in per-

formance and the differences will be only between the amount of skill required in each different class of work. And in these classes there is a difference in compensation.

Invariably the competition is keen enough on all quality records to bring nearly all the men (who have been at the work a sufficient length of time to become expert) practically to the same degree of proficiency.

The period is four weeks and the average to date begins all over again at the end of each four-weeks' period. The reason for indicating the standing of the men on a period average rather than the day's average is that it tends toward greater continuity of effort, which in itself is a source of much greater satisfaction to the workman.

It is the steady progress that really counts and not the spasmodic, spectacular high record for any one day. The record to give joy to the worker, must reflect the constant, steady inner urge which indicates the degree of his mastery of the forces he controls in the day's work.

(To be continued.)

Paper Tribunal to Hear New Evidence

(By Special Correspondence.)

More new evidence is to be secured and taken in the Canadian newsprint inquiry, presided over by Mr. Robert A. Pringle, K.C., Commissioner and Controller, but the date of hearing, though it was expected it would be soon, had not been fixed at Ottawa up to Monday this week.

The reason for the further hearing was brought about by the interim report of the Judges of the Paper Control Tribunal, which was made on Saturday last week. The making of an interim report by the Judges so soon after the conclusion of the hearing of the appeals in the newsprint and differential cases last week came as a surprise. It having been thought that greater time would elapse before a pronouncement of any kind would be made.

The newsprint appeals proper finished on Wednesday and about one and one half days were taken up with the differentials. No ruling on the differentials question was made. In all the Appeal Tribunal sat some twelve days, with week ends intervening from Jan. 8th to Jan. 23rd, and the next day made the following report:

PAPER CONTROL TRIBUNAL.

In the Matter of the Appeals by the Publishers and by the Manufacturers from the Order of Mr. Commissioner Pringle, dated 26th September, 1918.

At the opening of this hearing, Mr. Clarkson and his assistant, Mr. Taylor, were examined at some length by Counsel for the Publishers, but we reserved our decision upon receiving this testimony as evidence, and pending such decision Counsel for the Manufacturers did not cross-examine.

By the order of the Commissioner now under review it is provided that if the prices fixed by him "are at any time found upon investigation to be either too high or too low, there will be a revision of price from July 1st, 1918," and prices after that date were in part based upon estimates only.

We think that it is important that the prices when fixed by us should be final, and that all proper evidence which either party may think important should be before us.

Investigations have now been made by Mr. Clarkson which will enable the accuracy of certain estimates on which the price was fixed to be tested. We refer to the estimated increase of cost of wood, wages and freight after 1st July.

In view of the admission of the record of the proceedings before the Federal Trade Commission, of the necessity of confining the further evidence within reasonable limits, of the great mass of evidence already taken, and of the views we entertain with respect to certain matters argued before us, we do not think that further evidence should be received with reference to the following topics:

- 1—Capital investment.
- 2—Working capital.
- 3—Return upon investment.
- 4—Going value.
- 5—Depreciation.
- 6—Sinkage.
- 7—Stumpage.
- 8—Machine losses.

We desire that further evidence should be mainly directed and shall be substantially confined to the matters (other than those mentioned above as excluded) dealt with in the publishers' brief in the criticisms of the estimated cost of manufacture at the different mills and the estimated increased cost of wood, labor and freight.

If as the result of the criticisms of Mr. Clarkson's former reports he desires to modify his conclusions, he should be afforded an opportunity of doing so.

We shall withhold our decision for sufficient time to enable either party to give such relevant evidence as it may desire, and as is permitted under the above

ulings, before the Commissioner. The evidence taken before us is to be treated as taken by the Commissioner, with liberty to Manufacturers' Counsel to cross-examine thereon.

Upon this evidence we would ask the Commissioner to state what change, if any, should in his opinion be made in the prices fixed by him, and without any further formal appeal we shall receive further argument, either oral or written, as may be arranged by Counsel.

It is desired that this evidence shall be given as soon as practicable. If either party fails to proceed with diligence, a motion may be made for judgment on the evidence as it now stands, or the Tribunal may of its own motion determine the questions before it without awaiting further evidence.

Dated at Ottawa, this twenty-third day of January, A.D., 1919.

Sgd. THOMAS P. OWENS,
Registrar.

(Signed)
A. S. WHITE,
CHARLES ARCHER,
W. E. MIDDLETON.

Report of Proceedings.

The address of Mr. T. L. Phillips, counsel for the Fort Frances Company, commenced when the Tribunal resumed on Monday. He recited how the Controller had fixed a price of \$73 per ton as compared with \$69 for other mills for Fort Frances. He asked that eighty dollars be allowed.

Further on in the morning Mr. Phillips advanced the general proposition that the present value of newsprint plants should be considered rather than their cost value, in connection with the determining of a fair price for the product.

Counsel for Fort Frances made it plain from the outset that he was not going into small details of cost. Furthermore in his reply to Mr. Tilley's previous suggestion and invitation that further evidence be heard on this, Mr. Phillips said that if the whole investigation was opened up it would bid fair to pass beyond the bounds of mortal time and trespass on eternity.

"Costs," Mr. Phillips claimed, was only one element of evidence in the inquiry. It was a means to an end, but not the end itself. He went on to maintain that a fair selling price and not "cost" was the issue the Tribunal must decide. "Value" rather than "cost," he claimed was the basis of all price fixing.

Mr. Phillips quoted exhaustively from American decisions which had been handed down by the Courts of the United States. "It was never maintained that the cost of a thing is its value," he said. In this connection he argued that the decisions he quoted supported his contention that the present value and not the cost of the plants must be considered in fixing newsprint prices. This fact he urged wiped out the importance of the original investment, and how the capital had been acquired.

The chairman of the Tribunal at this stage said that the investigation into newsprint prices had been brought about because the market price of newsprint paper had not been satisfactory, and so he said he could hardly follow Mr. Phillips if by present value he meant market price.

Mr. Phillips, in reply, explained that what he was contending for was not for the market price of the product, but rather advocating that the use of the

market price of the product of the various newsprint plants should be accepted as a basis when the price was being fixed.

Mr. Justice Middleton said, "But when a reproduction cost is large or increased by reason of an emergency, is it right to use that inflated cost as a basis of fixing rates? As I understand it, the price fixation is only temporary, it was intended to afford relief in an emergency. Therefore it would not be proper to base it on such reproduction cost."

Mr. Phillips explained that if such a basis could not be accepted "wholly" that it was at least entitled to consideration. Mr. Justice Middleton referred to the Booth mill and the material in a supposed case that might be in it. "Supposing in that mill the material had increased fifty per cent. during the war, surely it would not be 'just,' as a basis for prices of newsprint." Counsel for Fort Frances maintained that while it might not be exactly fair to take such a basis with values at ultimate "peak." "But I do believe that in reproduction value some measure of increase should be reflected, and that certainly applies for the necessity for higher working capital," he said.

Adam was a "Going Concern."

On the item of "going value" Mr. Phillips was insistent, and very strongly maintained that there should be an adequate allowance for this charge. To more fully illustrate his contention he went back to Biblical days, and brought extracts from the book of Genesis. "When God created man out of the dust of the earth, He breathed into him the breath of life. This first man was Adam. When He breathed into him the breath of life He made Adam a going concern."

Newspaper publishers, Mr. Phillips said, should be among the last to object to going value, as it formed a large part of their general stock in trade. "The physical assets of most newspapers could be loaded on a few freight cars, and would not bring much at a sale," said Mr. Phillips.

Commencing his afternoon address Mr. Phillips drew attention to the position of the Minnesota and Ontario Power Company in the United States, as likened to the position of the Fort Frances Company in Canada. "On this (the Canadian) side of the border we have a leveller." He said there was the Business War Profits tax, which he maintained would adequately take care of any excess profits that were being made. He further argued, "Let the price be fair to all concerned." He referred to the constitution of the United States that a man's goods could not be taken away or removed without cause or compensation. He maintained that there was no evidence, technical or otherwise, to show why Fort Frances should not be entitled to its just return of profit.

Taking up the matter of capitalization required on a daily tonnage basis, Mr. Phillips contended that the figure of \$39,500 per ton investment was not an assumed figure, but an amount which had been accepted and approved by the Circuit Judges of the United States.

More reference was made to American statutes as to the allowance on investment in United States cases. After quoting them or making reference to them, Mr. Phillips said he had chosen this route to come to the position of the Fort Frances Company.

He described the location and position of Fort Frances and stated its relation to the interlucory connections with the Minnesota and Ontario Power Company. He told of Fort Frances being a village

situated on the Rainy River opposite International Falls, Minn., where the plant of the Minnesota and Ontario Power Company was located. In addition to the interlocutory connections between the Fort Frances Company, the Minnesota and Ontario Power Company, and the Ontario and Minnesota Power Company, there were also other companies.

The Keewatin Lumber Company, at the end of the Lake of the Woods, Mr. Phillips maintained, never furnished a stick of lumber to the Fort Frances Company from Crown lands. In support of his contention he pointed out that the cost of transportation of wood from this latter company to Fort Frances would amount to around \$5 per cord.

"The pulpwood that is used comes almost entirely from the State of Minnesota. There is very little Canadian wood used," said Mr. Phillips. He went on to point out that in supplying the pulpwood that the International Lumber Company came into direct competition with the interests in the State of Wisconsin. "There is very active competition," said Mr. Phillips, and later gave a rather lengthy reference to the evidence of Mr. Backus in the United States investigation.

In replying to what Mr. Tilley in his argument had advanced concerning the diversion of power from Ontario to the United States, Mr. Phillips said that the order in council and the act referred to (1911) had reference solely to electrical power. Thus Mr. Phillips continued to argue that as not electrical but water power was used to operate the groundwood mill that the diversion was not material, as Mr. Tilley had shown it.

He further went on that the cost per ton for the first three months of 1917 amounted to only \$34.74 and which by the following December had increased to \$58.74.

He claimed that the Government had no economic or legal authority to take away the profits or prevent production. The case with Fort Frances had been that it had been forced to sell at less than its cost to produce.

Regarding supply, he said: Combined the plant and timber lands amounted in value to \$13,826,033. A return of 15% as to divided into the tonnage would figure out to \$39,505 per ton or only five dollars per ton higher than the allowance made by the Circuit Judges. The costs, he said, for the first three months of 1918 as averaged over the period were \$55.78. Eventually Mr. Phillips after citing many more figures and explaining different systems brought the figure up to \$86 per ton in comparison with capitalization.

Here Mr. Phillips referred to the merger of the Bank of Ottawa and that of the Bank of Nova Scotia. In this he said four shares of one stock had been given for five of another, and mentioned the returns they would yield. "Two and two is four," said Mr. Phillips. "Not always, it might be 22," said Mr. Tilley.

Savings To-day Investments of To-morrow.

Continuing, Mr. Phillips said, "The capital of to-day is the savings of yesterday, and the capital of to-morrow, if there is to be an expansion of industry are the accumulated savings of to-day. If on account of an emergency you or others do violence to sound economic principles with any industry and so limit the reward, in comparison with investment in other lines, as to drive out money, or fix a selling price which is so narrow a spread above manufacturing costs as to prevent proper surpluses to provide capital for to-

morrow, you will have permitted the assumed present emergency to blind your eyes to the future and for the sake of a supposed present contingency put the Dominion in a position of people, who in times of stress have eaten 'the seed corn,' thereby turning the moderate stress of to-day into the famine of to-morrow."

Mr. Tilley in Rebuttal.

Beginning Tuesday Mr. Tilley referred to the order-in-council which granted authority for the newsprint inquiry. He maintained it was intended that the inquiry was into "cost and use" and asked the judges to note "and." Concerning the progress of the inquiry the publishers' counsel said they had never been called on to express their "willingness or unwillingness." "Every time there was a threat, something was done that the inquiry was to be pursued as outlined. We were told Mr. Pringle would get at his price by cost and a reasonable profit."

He went on to refer to the period certain paper manufacturers were under indictment in the United States, and drew attention that at the time he had tried to go into the question of combines that Mr. Pringle had ruled against him. He maintained that, if an inquiry was to be made as to any combine among Canadian manufacturers, that was the time it should have been pursued. He maintained that the publishers were entitled to protection from any combine, and that it was in their interests to know whether a combination existed or not.

The definition of profit as given by Mr. Montgomery at the Newsprint Inquiry was cited and argued upon by Mr. Tilley. He said that for the purpose of fixing the price the "reason" the Government had for fixing or setting a price could be eliminated. "I have never asked that any price be fixed on the ground of it being an apparent reasonable price." What was to be done as Mr. Tilley saw it was that it was first necessary to determine the justness of the price to be paid before "you inquire whether the newspapers can pay it or not."

Continuing Mr. Tilley argued that the newspaper industry had been a "protected" industry and was so to-day. In support of this he argued the giving of grants and concessions in the form of lands and powers for the purpose of aiding the industry. Also he referred to the creation of tariffs and protective legislation which not only referred to the newsprint industry but to other industries as well."

On the \$69 price Mr. Tilley said he hoped to show that the manufacturers were making an unreasonable profit. Mr. Montgomery here interrupted and went on to show that it could be expected that the manufacturers operating to 110 per cent capacity, should expect a greater profit than when previously they had only been operating at 80 per cent capacity. In other words it was like a man being called on to do more than he should do to earn the same (perhaps it was less) return as if he had only worked four-fifths of his capacity. "We all go through these cycles," said Mr. Montgomery.

Mr. Tilley later said that he thought he had already shown that at the \$50 price for the first six months of 1918 the mills had been getting a higher profit than they had been accustomed to before the war. He cited production figures for the different mills in comparison with their past operations as compared with capacity production which showed that:

John R. Booth in 1914 on a rated capacity of 39,000 tons produced 94.94 per cent of capacity; in 1915,

91.60 per cent; in 1916, 96.97 per cent; in 1917, no figures; in 1918 (first six months), 97.20 per cent.

Laurentide, rated at 66,000 tons, produced in 1914, 97.37 per cent; in 1915, 99.31 per cent; in 1916, 96 per cent; in 1917, 104.18 per cent; in 1918 (first six months), 100.9 per cent.

Mr. Tilley went on to argue that by these figures there was not a great deal to show that a tremendous readjustment had been made, or that production had gone down as the result of the war situation, or that the mills had been suffering hardship in their plants.

In replying to the charge that the Canadian press had not curtailed newsprint, Mr. Tilley quoted figures in comparison with the United States press, to the effect that the amount consumed per capita in the United States was half as much again as in Canada.

In connection with the allegation that had been made, that when the papers had cut down the size of their editions they had increased their price Mr. Tilley said, "If at the same time we can save money and paper, what is wrong about it?"

Mr. Tilley argued that it was the advanced construction cost which had kept the mills from making additions and the industry generally expanding in the form of new mills being built."

The allowance for depreciation was taken up and figures in regard to the John R. Booth mill were cited, for groundwood, sulphite and newsprint. "If you take the Federal Trade Commission allowance you get five per cent, if you take it on Mr. Booth's actual value you get over ten per cent," said Mr. Tilley.

Reference to a chart showing the production of newsprint which appeared in the issue of the Fourth Estate December 7th, 1918, was made. "You can see what a purchasing power we should be protected against. When you look at these two curves you see why the Canadian publishers are entitled to protection against the large consuming power in the United States," said publishers counsel.

Mr. Tilley later on took up the situation when Mr. Pringle had set the price in January, 1918, claiming that in fixing it the Controller had set a winter price on summer costs. Mr. Tilley drew attention to different figures which had been found by Mr. Clarkson in his re-investigation as compared with those in Mr. Pringle's interim report. "In every case I find the average price lower in the books than in the interim report on which Mr. Pringle set his price. In the case of Laurentide it is nine dollars higher for the summer than for the average of the ten months. With the \$69 price you get a winter price made up on summer costs."

Mr. Tilley also went on to maintain that in 1917 most of the contracts read f.o.b. mill, whereas in many instances before he argued paper was sold at a delivered price, or a price was quoted for it at the publisher's city or his press room. He cited various instances that thus the net price was about thirty-five dollars per ton, which in comparison with the sixty-nine dollar rate was only about half as much. In this connection he read the following figures as prices prevailing in the years 1915 and 1916, which were given, respectively as: Abitibi, \$35 and \$38.25; Belgo-Canadian, \$35.99 and \$37.99; Booth, \$38.44 and \$41.66; Canada Paper Co., \$38.20 and \$39.40; E. B. Eddy, \$38.10 and \$38.70; Fort Frances, \$43.83 and \$45.00; Laurentide, \$36.75 and \$37.52; Spanish River, \$36.44 and \$36.21. The figures for Price Bros, were also read.

Further on he took up the question of an allowance for stumpage, broadly asserting that stumpage should not be allowed for lands held under lease. He claimed that if stumpage was disallowed \$2.42 would come off the price and if dues were deducted it would mean 44 cents.

Reference to the figures and proportionment for slush and lapped pulp were gone into, in the case of the Booth mill. "If they have an excess of groundwood and sulphite then they (the mills) have their profit and it should be charged to that department."

"I am not concerned with the purchases of it. If it went into newsprint paper it went into cost and we have paid for it," said Mr. Tilley. "It is not in any sense a by-product." He objected to the averaging of costs over the lapped and slush pulp, and wanted for the purposes of his argument that the cost of slush pulp which entered into newsprint paper be considered.

Counsel for the publishers maintained that the difference in cost of sheet over roll news was seven dollars per ton. On wrappers he said, "My learned friend conceded \$1.11 for wrappers. Our own computation was \$1.95 cents per ton. I conceded \$1.68. I do not think anybody has successfully shown the incorrectness of this." The patriotic fund charges, he said, should come out of profit. He was not going to question whether Mr. Booth was a charitable man or not. He maintained that there was a selling charge amounting to \$1.30 per ton that should come off on Booth's Canadian supply.

Tangibles, Machines Losses, Labor and Freight.

Tangibles were taken up. He went on to explain the appraisal which had been made of the Booth plant since the newsprint inquiry began. "If Mr. Booth's property is shown going up all the time why should we concede depreciation, when it is appreciation?" asked Mr. Tilley.

(Continued on Page 121.)

Correction in Power Paper

No apologies are made because we nearly worked our heads off to get out preprints of Technical Section papers. In spite of extra care, two lines were transposed on page 113. The table, with author's changes, should read:

125 H.P. DRIVE TO MULTIVANE BLOWER 30 CYCLE CURRENT 440 VOLTS.

A—Chain Drive.

600 R.P.M. Motor Complete	\$2,275.00
100 H.P. Silent Chain Drive, ratio 600/360 ..	537.60
Oil tight Casing for same	116.00
R. O. Outboard Bearing for Fan Shaft	85.00
Installation Cost of Motor	125.00
Installation Cost of Outboard Bearing	22.00
Installation Cost of Chain Drive & Casing..	15.00

Total Cost

B—Direct Connected Drive.

360 R.P.M. Motor complete with Coupling ..	\$3,110.00
Installation Cost of Motor	145.00
Installation Cost of Coupling	10.00

Total Cost

Total Net Cost

In the second line preceding the table, readers are asked to substitute "much" for "any" on page 113.

Indirect Cooking by Forced Circulation*

The Morterud System of Cooking Chemical Pulp Indirectly with Forced Circulation as Applied to the Manufacture of Sulphite.

By DR. ALBERT E. NIELSEN,
A/S Cellulosepatenter, Norway, and Fibre Making
Process, Chicago.

Historical.

After having succeeded in dissolving the lignin substance of straw, rags, and wood by the alkali process, several men interested in chemical pulp manufacture were trying to obtain a cheaper and more favorable process for wood.

It was already known in the middle of the last century that the lignin in wood could be dissolved by nitric and sulphuric acids. The object of these processes was to recover the fibre as well as the sugar in the lignin, but the fibres were attacked by the acid and the process proved of no value from a paper-maker's standpoint.

In the first part of the last century it was known that bleaching straw with SO_2 gases gave a permanent bleach and that the mild treatment of this chemical did not destroy the fibres. This was an indication that sulphur compounds could be used to advantage in treating materials containing cellulose.

In 1857 an American, Mr. C. B. Thilgman, was carrying out some experimental work on treating fats, in Paris. In these experiments he used sulphurous acid and he discovered that this acid had a tendency to dissolve the wooden tanks he was using. After years of experimental work Mr. Thilgman took out his patent in 1866 on a process for manufacturing pulp by the calcium bi-sulphite process, which proves that he is the original inventor. He used horizontal rotary digesters lined with lead and cooked indirectly by steam coils. The cooking temperature he used was 127°C . and $4\frac{1}{2}$ atmospheres pressure.

His process did not prove a financial success on account of excessive repairs and he was forced to give up the work after spending all his money.

Although Thilgman had proven that the sulphite process had great advantages over the alkali process for certain kinds of wood it was not until 1872 that the Swede, Mr. Carl D. Ekman, took up the problem and succeeded in manufacturing sulphite in 1874 after having gone through many difficulties trying to convince paper makers that this new pulp was superior to any other on the market. The digesters were vertical, lead-lined, and heated indirectly by a steam jacket around the bottom half. They were made to revolve 180° for emptying like a Bessemer converter. The total cooking time was twelve hours and cooking temperature 130°C . with a yield of 360 kilograms per digester.

These digesters were used in the mill for twenty-two years before they were finally discarded, which proves that his process was entirely practicable.

Later on the sulphite process was started in Germany by Professor Dr. A. Mitscherlich. He used a vertical stationary digester lined with lead and acid proof brick. The cooking was done indirectly with steam coils inside the lower part of the digester.

The direct cooking process was later introduced by the German chemist Dr. Carl Kellner and this is generally called the Ritter-Kellner sulphite process. He used direct steam and stationary vertical digesters. Many other inventors followed and one of the best known is the Swede, Mr. Flodquist, who cooked pulp with direct steam in horizontal revolving digesters. He made a great step ahead of the other inventors by making improvements in the acid plant.

The latest step in the manufacture of sulphite is the Morterud process which was introduced in Europe in 1900. This process, which was introduced in 1911, for sulphate, has gone through many years of experimental work and is now considered to be a success. This system is in operation in the leading sulphite mills in Norway, Hungary, and Germany, and is now being introduced in the United States and Canada by Fibre Making Processes, Inc., Chicago, which firm has installed it in a number of sulphate mills since 1916.

An article from my pen in "Paper" for November 13, 1918, explains the advantages of cooking chemical pulp indirectly with forced circulation of alkali. I desire to call attention to the fact that the same advantages can be obtained by the use of this process for sulphite. It is very well known that the so-called Mitscherlich pulp has certain advantages over the so-called Ritter-Kellner process, but on account of the slow cooking caused by the small heating surface inside the digester and the slow circulation of acid, the majority of sulphite mills to-day are cooking with direct steam.

In following up the cooking processes for alkali and sulphite pulp we notice that the object of the different processes was to obtain the best class of pulp at the least expense and the largest possible production with the simplest equipment. The indirect cooking process will always be ahead of the direct cooking process if the disadvantages in the old Mitscherlich cooking system can be taken care of.

The Mitscherlich Process.

Chemical pulp manufacturers have always known that the indirect cooking of pulp gives them a stronger quality, a saving in sulphur, and a higher yield from the wood, but certain disadvantages in this process have caused the majority of sulphite mills to adopt direct cooking.

The disadvantages in the old Mitscherlich cooking process as compared to the direct cooking process are as follows:

The cooking time is excessively long. The many

*Address at the annual meeting of the Technical Section of the Canadian Pulp & Paper Association, Montreal, Jan. 30, 1919.

connections of the large heating coil inside the digester are constantly leaking and are difficult and expensive to repair. When the heating coils have to be repaired the digester has to be shut down, with a consequent loss of production. The removal of mono-sulphite from the coils also causes difficulty and loss of production, and there is also the added disadvantage of these deposits of mono-sulphite constantly dropping off during the cooking and soiling the pulp. On account of the numerous leaks it is impossible to recover the condensate which means a great loss of coal. It is a well-known fact that the quickest way to heat gas or liquid with any heating surface is by high velocity over the heating surface. The heating surface inside a digester where only natural circulation takes place has necessarily to be much larger than if forced circulation is established. With slow heating it takes too long a time to bring the cook up to full temperature and it is, therefore, customary to finish up the cook with direct steam. This results in a half indirect and half direct cooking process and the full benefit of indirect cooking is not obtained. Another disadvantage of this system is that the chips are brought directly into contact with the heating surface, which causes over-cooked pulp and lower yield from the wood. The slow circulation and the heating coils in the lower part of the digester cause uneven cooking conditions as the bottom part will be digested first.

The Ritter-Kellner Direct Cooking Process.

This process has been preferred by most of the mills as it is the quickest. With a strong acid, high in combined SO_2 , it is possible to bring the cooking time down almost to a minimum. All leaks and production disturbances are overcome and repairs are cut down as low as possible. From these facts it would seem that there could not be any discussion as to which of these systems should be preferred, but the cheapest one is not always the best, as is the case here. Manufacturers of strong sulphite pulp have, in spite of the many disadvantages, continued to put in the old Mitscherlich cooking process for the reason that pulp similar in nature could not be obtained by direct cooking.

In all direct cooking processes a pre-heating of the lower part of the cook takes place and through cooking the cook by the direct steam an uneven over-cooked pulp is the result. The quicker the cook is finished the worse it is. The yield from the wood and the strength of the pulp is considerably reduced.

Before the lignin in the wood has started to dissolve the top pressure must be relieved and the more the cooking time is accelerated the more top pressure must be relieved. What that means to the acid is easily understood. The free SO_2 gas is drawn from the acid before being able to do its work and is diluted by the condensate. For this reason a higher initial strength of acid is necessary. This will be explained later. All the heat in the relief before the cook is finished is wasted. So, also, are the sulphur and lime lost through the formation of calcium sulphonate. If recovery of the waste liquor is contemplated the dilution has also its great disadvantages.

No two sulphite mills cook alike. They use different acid, pressure, temperature, and time, and generally a secret way of relieving with rest periods at different stages, and all are probably using the same kind of wood. This shows the weakness of this sulphite process and the necessity for standardizing it.

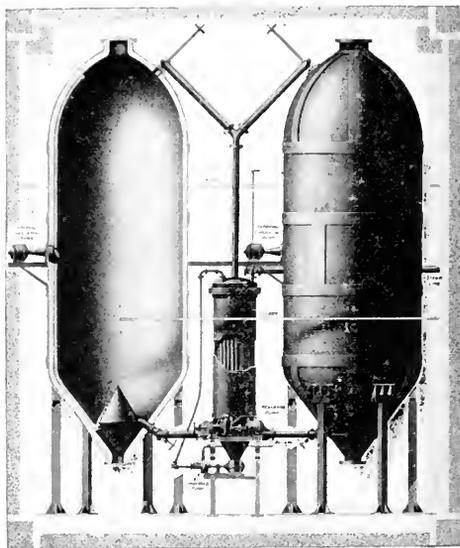
ROTARY DIGESTERS: There are still some pulp

makers, especially in Scandinavia and Germany, who are favorably inclined to the use of the rotary digester for the reason that this system gives them a more evenly cooked pulp with less fuel. These new rotary digesters are generally built horizontal and revolve on trunnions. These digesters have without doubt some advantages over the direct stationary digesters, as claimed above, but the disadvantages far outnumber the advantages.

The construction of a rotary digester is very expensive and the whole digester installation will be considerably more expensive than by the use of stationary digesters for the same production. The filling, emptying, and operation of the digesters is troublesome and costs considerable in time and labor. It also makes the blow-off impossible and cuts down the production. The size of the digester cannot for practical and technical reasons be large.

The Morterud Process.

In considering these three processes we are going to ask ourselves whether or not all advantages in these processes can be taken care of in one process without their attendant disadvantages. The answer to this question is that the Morterud process of indirect cooking with forced circulation will accomplish this desired result. The disadvantages in this cooking process are very small when compared to the advantages derived from its use. Its economy will later



on be discussed under "Calculation of Cost."

The disadvantages compared to direct cooking are as follows:

Power is required, and pumps and heating apparatus for the acid are necessary and these mean repairs and upkeep. As it is necessary to have maximum velocity of the acid passing the heating surface in order to reduce the size it is not feasible to do this in an easier way than with a pump which at the same time keeps the acid uniform. The second pump required takes the condensate from the heating coils direct to the boiler. No doubt a steam trap could be used for this purpose, but experience has shown that the condensate

is removed from the heater more rapidly with a pump than by a steam trap, which means more efficiency of the heating surface. It also prevents leaks through the gasket of the steam chamber in the heater. Another important factor is that the condensate is brought directly into the boiler with the least possible power.

If it is agreed that the indirect cooking process gives the best results in every way in regard to quality of pulp, and saving in cooking time, sulphur, lime, and yield from the wood, a heating surface is necessary and if this heating apparatus is brought into use with the least trouble and expense the goal of perfection would seem to be attained and this is true of the Morterud heater which is placed outside the digester. A leading sulphite man remarked after the system had been in operation in his mill for some time: "The Morterud system looks to me like Columbus's egg." Mr. Morterud's answer to this was: "The egg must then be rotten"—meaning that it had taken him so long a time to convince pulp makers of the advantages of his cooking process.

Below is an estimate of the cost and upkeep of one unit for a ten ton digester equipped with one 8" heater, which will bring the cook up to full temperature in 4½ hours; one 8" outside circulating pump which requires 8 H.P.; and one 3" condensate pump which requires from 10 to 15 H.P. and can be used for several heaters.

Cost of heater fully equipped and installed, \$20,500.
 Cost of up-keep and operation per annum:

Replacing heater pipes once every 18 months.	\$2,000
Repairs on pumps	70
Repairs on motor	50
Oil, packing, etc.	150
Total up-keep	\$2,270

Power, 20 H.P. @ \$50	\$1,000
Depreciation, 10% of cost	2,050

Grand total \$5,320

Pulp production, 7,000 tons, yearly
 Cost per ton 5,320

———— = \$.76
 7,000

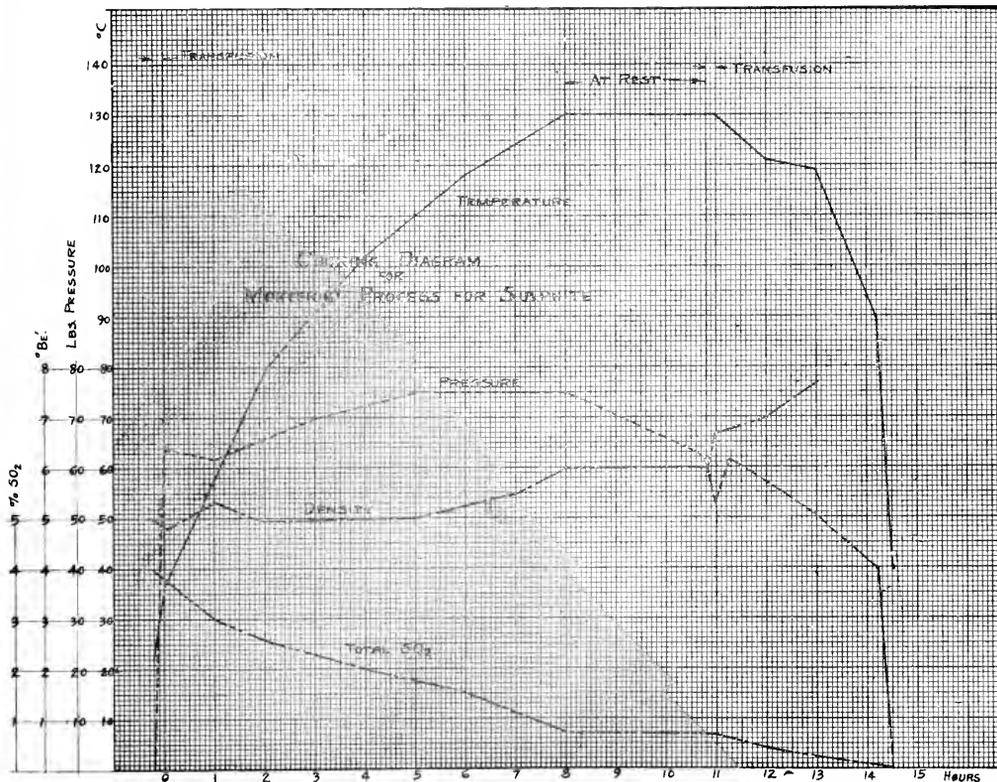
Savings Per Ton.

Coal—25% of 1,000 lbs. at \$8.00 per ton.....	\$1.00
Sulphur—10% of 230 lbs. at 30.00 per ton.....	0.34
Lime—50c per ton of pulp.....	0.05
Wood—8% of 2.1 cords at \$10.00.....	1.68
Total Savings	\$3.07

Saving in labor, building, digester, boiler and depreciation, etc., on account of increased production 1.25

Total savings	\$4.32
Total expense	0.76

Net saving per ton \$3.56



We are now going to follow up the whole construction and operation of the Morterud process in order to show how the advantages are taken care of and the disadvantages are avoided.

HEATER: The heater can be constructed to accommodate any steam pressure and size of digester and cooking time. As the picture shows the heater is a vertical one equipped with acid proof bronze or copper pipes which at one end is fitted to a tube plate of special construction. The tube plate is made of steel and is lead-lined in the acid chamber. The shell is made of steel plate and is lead-lined inside. The lower end of the shell is tapered down to a chamber so that if lime slag should be formed on the heating pipes it would drop down and be removed from time to time through the bottom cover. The upper end of the heater has a steam and condensate chamber.

OUTSIDE CIRCULATING PUMPS: The circulating pump is of special construction and is of a size to accommodate the heating surface and it is made of acid proof bronze or lead either directly connected to the motor or belt driven. It requires from 8 to 15 horsepower and runs from 800 to 2000 revolutions per minute.

CONDENSATE PUMP: This is constructed to press the condensate directly into the boilers of any steam pressure and to handle the whole condensate from six or more heaters.

The construction of this pump has through many improvements been brought up to an efficiency equal to the best circulating pump for cold water and everybody knows what it means to pump hot water as high as 400° Fahrenheit against boiler pressure. It takes from 10 to 15 H.P., and its speed is 1,400 to 3,000 revolutions per minute. The pump is made for belt drive or directly connected to the motor.

The horsepower varies with the drop of the steam pressure in the heater during the cook and this drop is from 20 to 75 lbs. The following drops in pressure must be overcome:

- (1) Drop of steam pressure from boiler house to digester room.
- 2 Drop of steam pressure going through the heater.
- 3 Additional pressure according to the length of feed water line to the boiler house.
- 4 Additional pressure according to back pressure in the feed water line through the boiler house-feed water pump.

The reasons for these drops in pressure are:

(1) This drop in pressure is, of course, varying in the different mills according to length, diameter, and insulation of steam header from the boiler house to the digester room. Many old mills have increased their production and boiler capacity without increasing the size of the header. This causes a great drop in pressure which the condensate pump has to overcome.

2 When the steam enters the heater at the start of a cook it is as a rule well saturated on account of having been stationary in the steam header and the heater. The liquor in the digester is cool and the result of these two conditions is that the condensate water coming from the heater is low in temperature and pressure. As the temperature of the liquor goes up the temperature and pressure of the condensate water also goes up. The condensate pump will in this way be gradually unloaded. By the end of the cook the temperature and pressure of the condensed water will approach that of the steam going

to the heater and the pump will only have to work against the pressures mentioned under 1, 3, and 4. If the steam pressure is reduced before going to the digester room the condensate pump also has to overcome the difference in reduction.

INSIDE CIRCULATING PUMP: This pump is installed in two cases only: first, when one heater is used for two digesters like that shown in illustration, and, second, for very long cooks where it is found advisable to maintain circulation without using and wearing out the more expensive heater.

The circulating pump is made of hard lead and is fitted to the inside of the digester shell with a sleeve with an outside nut in the same manner generally used for fastening relief strainers.

The suction line is made of hard lead and fastened to bronze shoes which are bricked into the lining. The bottom of this line comes from the bottom strainer and the top has a check valve to prevent chips from getting into the line. This pump takes 8 H. P., and runs 800 R.P.M. and can be either directly connected to the motor or belt driven.

FILLING THE DIGESTER WITH CHIPS AND ACID: When the chips and half the amount of acid have been filled into the digester the circulating pump is started. During the time the rest of the acid is filled into the digester the chips will settle by the circulation of the acid. Before the cover is put on the digester a refilling of chips can take place. In Sweden and Germany steaming and pneumatic tamping is used in order to get the most possible chips into the digester. Of course, these methods of filling take steam, time and labor.

The amount of fresh acid is 30% less than the amount used without the Morterud system. The acid we recommend is for easy bleaching pulp 4.5% total SO_2 , 3.6% free SO_2 , and 0.9% combined. The reason for decreasing the amount of acid is the transfusion of liquor.

TRANSFUSION: When the digester head has been put on the transfusion of liquor takes place in the following manner: From the bottom of the digester next to blow-off the liquor is taken into the bottom of the digester just being filled. The transfusion continues until this last digester is full, which must be carefully watched by the gauges of the two digesters. Before the pressure on the starting digester is reached the relief valve is opened. After the cold air is relieved the acid starts entering the relief line which easily is observed by the sound in the relief line. This takes 15 minutes. The transfusion valves are now shut and the steam valve in the heater can be opened wide. As shown on the cooking diagram page 107, the pressure of the digester next to be blown drops down during the transfusion, but as soon as the transfusion is done the pressure again goes up. The pressure in the starting digester, on the contrary, goes down. This diagram, which is taken from a twelve ton digester equipped with the Morterud system, shows the changes that take place during the cook in the strength of the acid as well as in the gravity of the liquor, and in the pressure and temperature. The first thing to be noticed is the saving in coal and time by the transfusion as the temperature is brought up, from 24° Cent. to 37° Cent. within 15 minutes. 30% of the amount of SO_2 and lime which is generally lost in the waste liquor by direct cooking is also saved. The possibility of charring the chips at the top is made

impossible because the liquor has been forced in under high pressure replacing the air in the digester.

By following up the diagram it shows a little drop in the density of the acid at the start on account of the water in the wood diluting it and the transfusion of waste liquor into this digester increases the density. The density goes up gradually to that of the original acid and remains there until the temperature has reached 110° C. The dissolving of the lignin plainly commences at this temperature and increases gradually until the maximum temperature is reached. During the rest period the density remains at a standstill until the transfusion into the next digester takes place. Then it goes up very rapidly until the relieving of the gases is done. The maximum density is 7.7° Be', against 5.7° Be' for direct cooking with the same acid.

Outside of the benefit arrived at by the saving of time in getting up to pressure and temperature and the consequent saving in steam there is also another and vastly more important benefit which the transfusion gives. As one-third of the liquor is drawn off there is formed a space above the liquor which is gradually filled with gas from the remaining acid. Every molecule of acid outside and inside the chips gives up free SO₂ which bubbles up like the gas in effervescent wine. As the gas rushes out from the acid in the nearly digested pulp it opens up the fibre bundles and acts very thoroughly on the pulp making it more easy bleaching.

By regulating the cook it will be found very easy to get any kind of pulp from hard to easy bleaching and the pulp has been found to require very little bleach.

GOING UP TO TEMPERATURE: The maximum temperature is reached quickly as the heater has a surface large enough to transmit the heat in the shortest possible time.

With direct cooking it is customary to have a rest period before reaching maximum temperature to allow the temperature at the bottom and top of the digester to equalize and also to allow for difference of moisture in the chips. With the Morterud Process this rest period is not necessary which means saving in time. With the direct cooking care must be taken not to bring up the temperature too rapidly as the steam might core the cook and stop the circulation and at the same time form top pressure and scorch the pulp. With direct cooking it is necessary to relieve the liquor in order to bring up the temperature. In some cases this relieving of liquor is done at certain intervals. In other cases the relieving is done continuously until maximum temperature is reached. What this means to the strength of the cooking acid is well known by everybody and, as explained before, it causes a great loss in active SO₂ as well as a direct loss of heat. With the Morterud process it is, therefore, possible to cook with a much weaker acid which in addition is diluted with 30% waste liquor through transfusion so less fresh acid is necessary.

The maximum temperature of the cook varies in different mills according to the wood, cooking time, strength of acid, and the product desired. In Europe the maximum temperature seldom goes over 140° C. while here it goes up as high as 165° C. It is a fact that the strength of the pulp and the yield from the wood decreases with the increase of the temperature and as it is possible to cook with a lower temperature with indirect cooking than with direct, using the same

cooking time, there will be an increase both in quality and yield for the indirect method.

When the maximum temperature has been reached the steam is shut off and a test of the acid is taken. If the test is right the circulating pump is stopped and the gassing off can proceed at once and is carried on until the cook is finished, which, of course, depends on the grade of pulp that is desired. If the test is too high a rest period must be given the digester to allow a further dissolving of the lignin to take place. During this rest period the circulating pump is kept running and frequent tests will determine the time that the gassing off can start. The pump is then stopped and gassing proceeds as above. The top valve on the circulating line must be closed before the circulating pump is shut down to prevent chips from entering the heater from above. The bottom valve, however, can always be open.

The relief valve must be opened gradually so as not to draw down the pressure too much at once. If the pressure is too low for blowing off at the end of the gassing off period the pressure is raised by live steam from the bottom of the digester to the desired point. The digester is then blown in the usual way.

COOKING ACID: With direct cooking there is a constant overheating at the steam inlet in the bottom of the digester which causes formation of sulphonic and sulphuric acids. There must always be an excess of lime present to neutralize these acids, otherwise the pulp will be attacked by them. It is, therefore, necessary to have a fairly high percentage of combined SO₂ for direct cooking. Even if there is enough lime present it has been found that free lime can be present alongside of free acids without being neutralized. The following test of the waste liquor from a burned cook shows this plainly:

	Grains.
CaO	18.8
CaO as sulphate	23.7
SO ₂ as SO ₃	27.1
SO ₂ as S	13.5
Original S	6.75
SO ₂ in organic compounds	90.4

This analysis shows that this liquor had 18.8 grams free CaO and 27.1 grams free SO₃ per unit and it was burned because the poor circulation did not carry the free lime where it was needed for the neutralization of free acid. This takes place mostly in the bottom of the digester where the overheating by direct steam causes the formation of so much free acid that the lime which is present is not sufficient to neutralize it.

The perfect circulation of the acid with the Morterud process and the fact that minimum overheating and consequent formation of free acids takes place removes all this trouble and the fact that the combined SO₂ can be brought down to .5% with good results is a proof of this claim. The ultimate savings in lime and sulphur by the use of the Morterud process can partly be credited to this cause.

If sulphite liquor is heated and the free acid is allowed to escape like in direct cooking the mono-sulphite will be precipitated. If the free SO₂ is kept in solution this will not take place. As mentioned above the free SO₂ is not relieved by the Morterud process until the cook is practically finished and for this reason there is very little precipitation of calcium-mono-sulphite on the steam pipes in the heater. Should mono-sulphite be precipitated the strong cir-

calculation of free acid will again dissolve it. With the direct process there is, as mentioned before, formation of sulphonic as well as sulphuric acid and the lime salts of these acids will be precipitated. But as a minimum amount of these acids is formed there will be very little of such precipitates. The main reason for the absence of lime precipitates is, of course, the low combined SO₂ which this process needs.

By-Products.

In case the waste liquor shall be utilized either for the manufacturing of alcohol or tannic acid the high specific gravity of the liquor is of great importance. With the Morterud system the liquor contains 50% more dry substance than with the direct cooking and actual figures taken at the Union Company's mill in Norway show that the sugar contents was increased from 2.2% to 4%. For this reason a plant for utilizing the waste liquor, which really means evaporation or heating of great volumes of water, can be reduced considerably in size.

Without question the sulphite mills of this country before long will utilize their waste liquor as many European mills are now doing and it will be well to remember that the Morterud process will simplify this matter as mentioned above.

At the same time the recovery of methyl alcohol, cymol, etc., from the relief gases is feasible and simplified as these gases are more concentrated.

The technical difficulties that the inventor of this process had to overcome were many. The main point to solve was to get away from the formation of precipitate on the tubes. Careful study of the right proportion of the size of the heating surface to the speed of circulation and the volume of the digester, as well as the size of the pipes and the distance between them, and last, but not least, the correct regulation of acid by transfusion, has now brought the Morterud process out as a success.

OSCILLATING SUCTION BOXES.

To impart a balanced oscillatory motion to the movable suction boxes of a Fourdrinier papermaking machine is the object of an invention patented by Mr. William A. Aitken, paper mill manager, Gravesend.

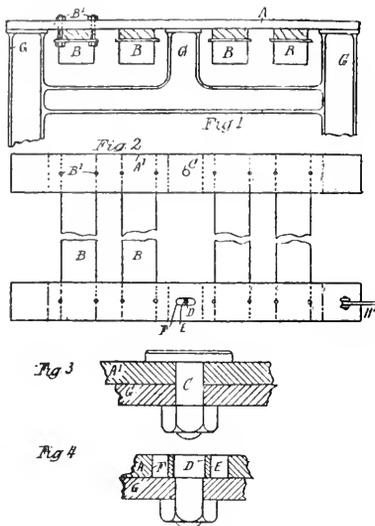
By pivoting the box-carrier at the centre at one end, the carrier at the opposite end can be caused to oscillate to and fro over an arc on either side of the central line, the distance of such movement being predetermined by the provision of suitable means such as slots and guide-roller pins to act as stops.

The purpose served by this centrally disposed motion is to impart an even or balanced and true oscillation to all the boxes equally so as to allow the wire to guide freely and keep to its running centre, whereas with fixed suction boxes (if the wire should get out of its running centre) the wire is held over to one side which strains the wire considerably.

Fig. 1 is an end elevation showing suction boxes in connection with one of the carrier plates and a portion of the supporting standards for same. Fig. 2 is a plan corresponding to Fig. 1. Figs. 3 and 4 are vertical sections showing the central pivot and the guide roller respectively.

The carrier plates A and A' have the suction boxes B attached to their underside by bolts B'. The plate A' is centrally pivoted at C to the standard G, while the plate A is centrally guided by means of a fixed pin D with roller E engaged in a curved slot F having

a radius centred at C. The ends of the plate A, A' can move freely on the upper faces formed on the standards. The motion at each side of the beam of the pivoted end will be up and down like the beam of a balance, that is at right angles to the transverse motion at the other end. The suction boxes with the carrying plates are operated by suitable gear such as a worm reducing gear with slow reciprocating motion, in any usual manner, connected say at H.



The particular motion of the suction boxes allows the ends to be set very near to the edge of the paper and thus prevent leakage of air and consequent loss of vacuum.

NEWSPRINT FROM OCEAN FALLS.

A despatch from Victoria, B.C., dated December 17, says:

One hundred and two thousand measurement tons of newsprint paper have been handled by vessels of the fleet of the Pacific Steamship Company, Ltd., of Ocean Falls, B. C., since January 1, 1918, according to tonnage figures compiled by employees of the traffic department of the company.

The shipments have been carried by twenty-five different vessels, including chartered craft, and nearly all the cargoes have been handled via Seattle. The greater part of the cargoes were billed through to San Francisco and Los Angeles, many of them being transhipped in Seattle for the South.

Although vessels have been dispatched to Ocean Falls on special voyages for cargoes of paper, the bulk of the shipments has been handled aboard southbound Alaska carriers which have called in the British Columbia port while on their way to Seattle from the North.

The total of 102,000 measurement tons of paper, which will practically represent the total tonnage for the year 1918 handled by vessels from the plant of the Pacific Mills Company, Ltd., was divided into 105 separate cargoes.

The Application of Power in the Newspaper Industry*

By JOHN STADLER, Belgo-Canadian Pulp & Paper Co., Ltd., Shawinigan Falls.

Outside of the raw material, that is the wood itself, power is the next important factor in the manufacture of newsprint paper.

It would be too far reaching to go into the details for producing power which would be a subject of its own for each different kind of primary power, but we assume that we have the power available and that we simply want to apply same where needed.

Before we select the nature of drive we must consider whether we want to operate the respective machinery in individual units or if we desire to have several machines driven together (Group Drive). If we resort to the latter, we must carefully select the machines to be grouped together so that one will not interfere with the operation of the other, and specially note that machines on which variation of angular velocity is intolerable must not be connected to group drive on which variations in power requirements are excessive.

The paper machine itself and the paper winder are the ones in the news paper industry which do not permit a great variation in angular velocity, and if on a paper machine the auxiliary machinery of the wet end is not directly grouped with the machine, a speed variation of the wet end auxiliaries may become very troublesome.

To apply power to machinery we have the following principal methods at our disposal:—

- 1—Direct Connected Drives.
- 2—Geared Drives.
- 3—Chain Drives.
- 4—Belt Drives.
- 5—Rope Drives.

A simple proposition—any Hand Book on Power Transmission will tell you how to do it. If electric power is used the average salesman of electric machinery will give you the required information and demonstrate to you by means of half-tone illustration actual installations which have been in service for years and have never given trouble. From this you will see how easily the matter can be solved, but in visiting various actual installations and getting the true facts of the case, it is quite different.

A plant making newsprint paper and producing both the mechanical and chemical pulp for same, requires from 70 to 90 H.P. per ton paper made, the average will probably be 80 H.P., thus a 200 ton news mill will require 16,000 H.P. It is a fact that about 80 per cent. of the power used is required for the mechanical pulp mill, and therefore here is the place where the application has to be made with due regard to efficiency and reliability.

The majority of groundwood mills in this country are operated by hydraulic power, and with few exceptions the grinders are direct connected to hydraulic turbines, or to electric motors in electrically operated plants.

Direct Connected Drive.—Here is the first item of power application, the direct connected drive, and also the machine which uses the largest percentage of power, the grinder, in the making of news paper.

Do we want a rigid or an elastic connection? If rigid, a clamp coupling or a flange coupling can be used; if elastic the band type of coupling is probably the one only suitable on account of the large amount of power transmitted.

From observations made in a number of mills it seems evident that the clamp coupling does work satisfactorily only when the shaft diameters are very large in proportion to the torsional moment, otherwise the shafts are broken at the key seats, therefore flange couplings or elastic couplings with solid hubs appear most satisfactory for transmitting large amounts of power, at least as far as preventing damage to shafts is concerned. But as to elastic band couplings we are told that the bands wear very rapidly if the connecting shafts are located slightly eccentric. Due to the introduction of the elastic coupling it is quite probable that the erection is not done as carefully as would have been the case with a rigid shaft connection, so why not use a solid flange coupling, avoid the trouble of band breakage, and the extra cost of the band couplings?

Often we have heard the statement that there is such a difference in the bearing pressure in the turbine and the grinder that the bearings of the latter, because of the higher pressure per unit area, wear more rapidly and before long undue extra load comes upon the turbine bearing, causing same to overheat and make operation unsafe.

The wear of a smooth running, well lubricated high class Babbitt bearing, operating under a pressure of about 200 lbs. per square inch according to observation is not over 0.003 inch per 10,000 operating hours, and since a grinder stone will last less than 10,000 hours we have normally only a maximum difference in bearing level of 0.003 inch during the period that a grinder stone lasts and during which time the shaft is not disturbed. In practice, however, this difference is still less because some wear also takes place in the turbine bearing.

Since the wear of a well lubricated bearing is so small as to be almost negligible would it not suggest itself that in order to allow for any trouble due to difference in bearing level and yet avoid elastic couplings to depend more on the flexure of the shaft itself and make installations of rigid connected power applications accordingly? By this we mean to increase somewhat the difference between the units to be coupled and have the smaller shaft longer so as to provide the additional flexibility.

What has been said about the turbine connection is also applicable to the electric motor. There is, however, an additional factor which we must not overlook and that is the high momentum of the motor rotor and it would seem desirable that a safety link should be introduced in order to make the large momentum of the rotor harmless in case of a breakage

*Address at the annual meeting of the Technical Section of the Canadian Pulp & Paper Association, Montreal, Jan. 30, 1919.

of the grindstone. The question is, however: Is it good operating practice to have the band in an elastic coupling so light that in case of a sudden resistance same would break before any damage happens to the grinder itself?

It has been our observation with turbine drive units that in case of stone breakage in a number of instances the turbine came to a stop; the motor drive, however, on account of its great momentum would not do so. Will the elastic coupling band act as a safety link or will the broken stone clear itself? It is hard to advance a theory. What has been the experience with such drives? One would conclude that unless the elastic coupling is acting as a safety link, the power application can be made more reliable with a rigid coupling.

It is beyond question that all new mills to be built will be electrically driven; the only exception probably will be the paper machine itself, which even at a nominal cost of electric power can be driven with steam at an equal or less cost, as the exhaust can be employed for heating the dryers. Thus the direct cost of heat absorbed by the prime mover from the steam is very small; care, of course, must be taken to select a prime mover whose steam consumption will not exceed the requirements of the drying element of the paper machine.

What has been said before regarding grinder connection to prime mover can be applied here. A rigid connection gives entire satisfaction if a high speed engine is used, connected with the line shaft of the paper machine drive. And if a rope drive is used to transmit the power to the various units of the paper machine, there is no doubt that the jackshaft of the prime mover should be connected by means of a solid coupling. We have stated above that electric power will be the kind applied in all mills to be erected in the future, and since we have in the electric motor a machine that can be built any size required and for speeds to meet almost any condition, we believe that more endeavor should be made in the future to use direct connected drives wherever this can be done without excessive cost.

Paper mills require a number of centrifugal pumps which can, with advantage, be direct connected; this also applies to medium size fans, and if we want to use group drives the electric motor can be connected direct to the line shaft. Although some authors condemn high speed line shafts we see no reason why line shafts up to 150 H.P. should not be operated at a speed of 600 R.P.M. By using such speeds standard motors can be used, and if the installation is done carefully on heavy concrete foundations, no trouble whatever will present itself in the operation. Naturally such high speed shafts can only be used to advantage when the power transmitted by such group drives is for high speed machinery, and in such cases they are cheaper, more economical and just as satisfactory as slower drives. Observation has shown that as long as there is sufficient flexure in the connecting shaft and the machinery connected is not producing excessive vibration a rigid coupling with an electric motor gives the least trouble, but we would not recommend a rigid connection with an electric motor if the machinery driven produces much vibration.

A lot has been said above about direct connected drives. Wherever possible, with due regard to reasonable first cost, all units should be direct connected, but if speeds do not suit, we have to adopt such means as permit a different speed ratio.

Geared Drives are used in a number of other industries, but in a paper mill where most machinery has to be operated continuously, there is generally not enough opportunity to give gears, operating at high speeds, the necessary attention, and therefore such drives will give, before long, considerable trouble due to vibration produced which is transmitted to the electric motor, causing damage to rotor and bearings. The statement advanced that cloth or rawhide pinions on motors will avoid noise and vibration is only true to a limited extent. According to observation herring bone and spiral gears seem to run most smoothly and satisfactorily of any gear drive; but nevertheless we think that a gear drive should not be used with an electric motor for continuous service as encountered in paper mill work, unless the velocity is very much lower than generally recommended.

Chain Drives are next on our list, and if for the purpose of connecting the electric motor with the machine, high speed chains only are considered.

It is pleasing to note that builders of such chains are for some time past quoting on a little larger unit for a given power to be transmitted under same conditions as compared with installations of several years ago. This seems a clear evidence of the severe service that is encountered in paper mill work.

Chain drives in general work satisfactorily, provided the driven machinery has enough flywheel effect so that any sudden variations in load are not transmitted to the chain, but where there is the slightest variation of angular velocity of the driven shaft, the chain drive will not be found satisfactory. Endeavors have been made to overcome the trouble in chain drives caused by irregular angular velocity by means of compensating sprockets and this has solved the problem in some instances. Too much importance cannot be laid upon the lubrication of chains; and whereas some makers claim that their chains need not be run in oil tight enclosures, operating results have shown that oil tight enclosures for chains are a very good investment.

One must not overlook the fact that a good deal of water is used in a paper mill and there are a good many chances that too much water gets on a chain. In a very short time this seems to affect the case hardened surfaces and the presence of excess moisture also seems to wear the teeth of the sprockets very rapidly, therefore keep the chain drive enclosed and run the chain in an oil bath.

Belt Drives are as old as news paper mills at least, and will remain in use, in some places even to advantage over other more modern means of connection between motor and machine. A belt drive will be quite a satisfactory connection between a motor and a machine developing excessive vibration which otherwise might damage the motor and also the variation in angular velocity on the driven shaft will not be a great hindrance in the belt drive, and if the drive is proportioned with due regard to any such variation, the belt will absorb most of it. We know that certain chain drives are advertised as noiseless, yet there are requirements when an endless belt is even making too much noise; the electrical science has developed most wonderful devices for limiting overloads on motors, but we all know that such delicate instruments have failed to work when called upon. Everyone knows that a belt will slip or jump off the job if suddenly undue resistance is encountered by the machine to which it applies the power, and thus prevent damage to machinery.

Rope Drives.—The last item for our consideration is the rope drive, which in connection with electric motor application, however, will not be the factor it has been previously with slow speed power machinery; in fact, it would appear that in connection with normal speed electric motors a well proportioned rope drive cannot be installed because the pulley on the motor would be too small or the rope speed excessive. We shall therefore consider the rope drive only for applying power to the various units of a paper machine where same can be used to advantage if a paper machine drive without line shaft is used.

We have the American or single rope and English or multiple rope system and we can select manilla or cotton ropes. There is no doubt in my mind that either will work equally well if properly designed and installed, but never overlook the fact that a rope is no stronger than the splice and this, according to observation is the sore spot of all rope drives. In the American system we have one splice for each system of drive. But if the splice gives out you are delayed till a new one can be made. In the English system we have as many splices as there are strands of ropes, but you may proportion your drive so that you can always spare one strand and thus in case of trouble remove the defective strand and put the machinery in operation again with the least delay.

We have considered the various methods of application of power, and before terminating let us not overlook the fact that certain methods of drives have a much higher efficiency than others and furthermore that what makes the money in a manufacturing plant is the overall efficiency of the plant. In applying our power we must first of all look for the reliability and then consider the efficiency and cost. There is no use looking for a high efficiency on a few motor applications driving some auxiliary, the interruption of which would shut down a large part of the plant reducing the overall plant efficiency to a figure all out of proportion. Furthermore, the best of machinery will at times require repairs and therefore an

A—Chain Drive.

attempt should be made to standardize as much as possible the motors and means employed for applying the power so that in case of a breakdown spare units can be put in service with the least delay. It is beyond all doubt that the direct connected unit is the most efficient and least subject to trouble, but quite often we hear such installations are not practical for medium speeds on account of the high cost of electric motors.

To illustrate this we give below the cost figures of an installation which clearly demonstrates that we must not take the motor cost alone, but also what goes with it, and deduct what is not required. If this is done one will find that in a number of instances direct connected motor drives on medium and high speed machinery are not costing any more and are the most reliable mediums for power applications.

125 H.P. DRIVE TO MULTIVANE BLOWER	
600 R.P.M. Motor Complete	\$2,275.00
100 H.P. Silent Chain Drive, ratio 600/360.	537.60
Oil tight Casing for same	116.00
30 CYCLE CURRENT 440 VOLTS.	
R. O. Outboard Bearing for Fan Shaft	85.00
Installation Cost of Motor	125.00
Installation Cost of Outboard Bearing	22.00
Installation Cost of Chain Drive & Casing	15.00
Total Cost	\$3,175.60

B—Direct Connected Drive.

360 R.P.M. Motor complete with Coupling	\$3,110.00
Installation Cost of Motor	145.00
Installation Cost of Coupling	10.00
Less allowance for Outboard	\$3,265.00
Bearing not required on Fan	107.00
Total Net Cost	\$3,158.00

NOTE.—Lantern slides will be used for illustrating this paper.

SUMMARY OF THE PAPER INDUSTRY FOR DECEMBER.

Thirty-one mills of all the mills reporting on all grades of paper were down during the first week; 36 during the second week; 36 during the third week; and 91 during the fourth week. The principal reasons assigned were lack of orders, repairs, and lack of material. Of the above mills, the greater number were down for lack of orders, there being 43 mills closed entirely during the week of December 29th for this reason. The total number of hours lost by all mills for lack of orders during the week of December 29th, 1918, was 22,448, distributed as follows: board, 6,712; fine, 4,819; wrapping, 3,596; tissue, 1,896; felt, 1,680; bag, 576, and miscellaneous 688; and book 2,481.

There was a marked decrease in the production of all grades except hanging paper for the week ended December 29th on account of the loss of time occasioned by the holiday season.

Comparing the stocks on hand at the end of the period with the average production for the period it will be seen that:

Newsprint mill stocks equal slightly less than 1 week's output.

Book paper mill stocks equal slightly less than 2 week's output.

Paper board mill stock equal about 1½ weeks' output.

Wrapping paper mill stocks equal slightly more than 3 weeks' output.

Bag paper mill stocks equal slightly more than 1 week's output.

Fine paper mill stocks equal slightly more than 5 weeks' output.

Tissue paper mill stocks equal almost 2 weeks' output.

Hanging paper mill stocks equal slightly less than 1½ weeks' output.

Felts and building paper mill stocks equal slightly more than 1½ weeks' output.

Miscellaneous paper mill stocks equal slightly more than 3½ weeks' output.—U. S. Federal Trade Commission.

L'Air Liquide Society have secured a site on Dundas street, London, on which they propose to erect a factory for the production of oxygen and acetylene. Mr. E. Jordan is the general manager of the Society for Canada.

Power Board Meets a Real Need

(Special report to the Pulp and Paper Magazine.)

It has been clearly demonstrated during the war that the key to all industry is cheap, dependable power. Every country concerned in the conflict has been compelled to bring to bear the best expert advice and assistance available with a view to securing the maximum possible efficiency from existing sources of power. In Great Britain, the Imperial Government has appointed several important committees of eminent scientific and engineering gentlemen for the express purpose of re-organizing the power production facilities of the country. While the prime object of this reorganization was to ensure power production for war purposes, a very important factor was the absolute necessity for adequate action to meet the exacting conditions following peace. Other countries have taken similar action, especially France and Italy. Everywhere great dependence is being placed upon water power resources.

On this continent the production of power for industry has necessitated during the war the appointment of both fuel and power controllers. In the United States efforts have been made by the administration, both through its executive and Congress, to re-adjust, and reorganize the power production facilities of the country to meet the tremendous demands for energy required in the production of war material. The lessons learned in these efforts have proven the urgent necessity for some co-ordinating agency which will initiate and encourage whatever action may be necessary to ensure the best co-ordinated development and use of the various elements of available power producing agencies, including water power, coal, oil and natural gas. In Canada, the Government has been confronted with a very difficult situation in as much as the central portions of the Dominion, which are most thickly populated, and where industry has developed to the greatest extent, has practically no native coal, and the only source of power for industry is from water power or imported fuels. In the other parts of the Dominion, both water power and fuels are plentiful, and power production problems readjust themselves on a basis of economy and efficiency of available resources. Even a general survey of the power problems of the Dominion indicate many feasible sources of power that, unless their relative availability and suitability are thoroughly investigated, and the many problems of research, investigation, administration and exploitation involved, properly co-ordinated, there will undoubtedly ensue great confusion of effort, disjointed results and consequent loss of efficiency. There is manifestly an intimate inter-relation in the investigation, exploitation and administration of the many elements in the fuel-power resources of Canada. Some of the problems are and must always be of a distinctly Provincial nature. Others involve action by several Dominion departments. Many affect both Dominion and Provincial agencies. In the development and use of the varied power and heat producing agencies of the Dominion there is, therefore, a prodigious field for constructive co-ordination, which will combine the activities of all Government agencies in promoting the effective use of all fuel-power resources along lines for which each is best adapted.

Realizing the necessity of constituting a medium which would establish the necessary entente cordiale

between the different Dominion and Provincial organizations concerned with fuel-power problems, the Dominion Government has, by Order in Council, brought into being a unique organization—the Dominion Power Board—under the Chairmanship of the Honorable Arthur Meighen, which consists of the following Government officials:—

Arthur St. Laurent, Vice-Chairman; Assistant Deputy Minister of the Department of Public Works.

H. G. Aeres, Chief Hydraulic Engineer, Ontario Hydro-Electric Power Commission.

A. Amos, Chief Hydraulic Service, Quebec.

W. A. Bowden, Chief Engineer, Dept. of Railways and Canals.

J. B. Challies, Superintendent, Dominion Water Power Branch.

Dr. D. B. Dowling, Geologist, Department of Mines.

B. F. Haanel, Chief Engineer, Fuel Testing Division, Department of Mines.

O. Higman, Electrical Engineer, Dept. of Trade and Commerce.

C. N. Monsarrat, Consulting Engineer, Dept. of Railways and Canals.

John Murphy, Electrical Engineer to the Dominion Railway Commission.

W. J. Stewart, Consulting Engineer to the Dept. of External Affairs regarding International Waters.

Although the Board has been in existence but a few months, it has already accomplished notable results. Under the aegis of the Board there has recently been convened in Ottawa, representatives of all Dominion and Provincial organizations concerned with water resource investigation and administration. The subject matter of the conference is of great interest, and the conclusions arrived at will undoubtedly promote both national efficiency and Governmental economy. Those participating in the conference, in addition to the members of the Board, included,

R. J. Burley, Engineer, Reclamation Service of Canada.

E. F. Drake, Director, Reclamation Service of Canada.

C. O. Foss, Chairman, New Brunswick Water Power Commission.

T. W. Gibson, Deputy Minister of Crown Lands, Ontario.

H. W. Grunsky, Legal Adviser, Dominion Water Power Branch.

J. T. Johnston, Assistant Superintendent, Dominion Water Power Branch.

E. B. Jost, Engineer, Department of Railways and Canals.

R. S. Kelsch, Consulting Engineer, Montreal.

D. Lefebvre, Chief Engineer, Quebec Streams Commission.

K. H. Smith, Engineer, Nova Scotia Water Power Commission.

R. G. Swan, Chief Engineer, British Columbia Hydrometric Survey.

Wm. Young, Controller of Water Rights, British Columbia.

The subject matter of this conference was confined to water resources and water power problems only.

Definite and far-reaching conclusions were arrived at with respect to the inauguration of a Water Resources Index Inventory, common to all parts of Canada, and adaptable for any use, and which inventory will form a uniform basis for recording, analysing and making generally available, essential data.

Hydrometric survey activities of the many Federal and Provincial organizations will be co-ordinated and the results made available for general use in a standardized way, the details of the arrangement to be worked out by conferences of the organizations concerned; one to be held in Western Canada for the provinces of Manitoba, Saskatchewan, Alberta and British Columbia, and one in Eastern Canada for the rest of the provinces, and a final plenary conference to be held in Ottawa by the Dominion Power Board some time next fall.

Extensive consideration was given the various systems of administration and the different schemes of water power regulation in force in Canada. While there is much diversity in the methods of water power administration now in vogue in the different provinces, there is, apart from fundamental differences in policy between public ownership in the Province of Ontario and development by private corporate initiative under Government control in the rest of the Dominion, sufficient similarity in the fundamental principles of administration to give, undoubtedly, a great field for collaboration of mutual advice and assistance, and possibly for co-operation in perfecting a more or less standardized practice respecting such important and effective features as—Nature and Term of Franchise, Rentals, Control of Rates, Recapture Provisions, Determination of Franchise, etc., etc.

In view of the diverse and fundamentally important matters requiring mutual co-operation as between the various Dominion and Provincial organizations represented at this conference, it seems remarkable that such a get-together meeting has not been convened years ago, for it has long been apparent that co-ordination of effort and consolidation of experience in the subject matter of this conference is essential to the proper exploitation and development of Canada's water power resources.

While there has been lack of cohesion and occasional pardonable duplication of effort and expenditure in the work of these various organizations, there have been developed very efficient and effective administrative and investigatory systems covering practically all parts of the Dominion. No country enjoys more advantages from the development and use of water powers than Canada, and the best available information proves that no country has available at the present time more satisfactory basic information respecting her water resources generally than has Canada.

With a permanently constituted medium of co-ordination like the Dominion Power Board aggressively at work, there can be no doubt as to the further progress of the Dominion, so far as water power is concerned. To those who were responsible for the conference, the Pulp & Paper Magazine extends heartiest congratulations on the splendid results achieved.

PAPER MADE IN MEXICO.

According to El Universal, a prominent daily paper of Mexico City, the average consumption of paper by the various periodicals published there is 250 tons a month, most of it in rolls for rotary presses. There are three paper factories now in operation in the republic, as follows: San Rafael, producing a maximum of 150 tons a month; Loreto, 125 tons a month; Pena Pobre, 100 tons a month. This production includes all classes of paper, and not solely that used for newspapers.

PROGRAM OF TECHNICAL ASSOCIATION MEETING.

The technical and scientific part of the program for the meeting of the Technical Association in New York, Feb. 3—6, includes the customary reports of standing committees, with symposiums on (a) The Important By-Products of the Pulp and Paper Industry; (b) Power Efficiency and Fuel Economy; (c) Groundwood Pulp; (d) Clay Used in Filling and Coating Paper.

Among the special papers and addresses which will be presented at the Waldorf-Astoria are the following:—

- 1—Problems connected with the Recovery of Black Ash in the Soda Process, by George K. Spence.
- 2—Literature of the Paper Industry, by M. Hubbard.
- 3—Reckoning the Efficiency of Fuel Economizers in Paper Mills, by James Strachan.
- 4—Indirect Cooking of Pulp by Forced Circulation, by O. L. Berger.
- 5—Common Sources of Error in Sulphite Liquor Testing, by W. E. Byron Baker.
- 6—The Use of Woodpulp in the Manufacture of Nitrocellulose, by Vance P. Edwards.
- 7—American Clays, by Dr. T. Poole Maynard.
- 8—The Testing of Dyestuffs Used in Paper Testing, by Carl S. Schneider.
- 9—The Determination of the Tearing Strength of Paper, by Sidney D. Wells.
- 10—Cotton Purification and Caustic Recovery in an Explosives Plant, by Joseph H. Wallae.
- 11—Correlation of Theory and Practice in Papermaking, by James Strachan.
- 12—Process of Controlling Free SO₂ in Sulphite Liquor by Jos. B. Crandon.

Committee reports will be presented as follows:

- Abstracts of Literature—Ross Campbell, chairman.
- Bibliography—Henry E. Surface, chairman.
- Groundwood—J. O. Mason, chairman.
- Heat, Light and Power—Edward P. Gleason, chairman.
- Paper Testing—Fred. C. Clark, chairman.
- Soda Pulps—Martin L. Griffin, chairman.
- Standard Methods of Testing Materials—W. H. Gesell, chairman.
- Sulphate Pulps—O. Baehé-Wüig, chairman.
- Sulphite Pulps—Robert B. Wolf, chairman.
- Vocational Education—Geo. E. Williamson.
- War Service—Henry P. Carruth, chairman.

Banquet at Hotel Astor, Tuesday Evening.

At the annual banquet to be held at the Hotel Astor on Tuesday evening, February 4, Judge Charles F. Moore will act as toastmaster and introduce the speakers. Among those who have been invited to respond to toasts are the following:

S. L. Willson, formerly of the Pulp and Paper Division, War Industries Board—"The Part Taken by T. A. P. I. in War Industries' Work."

George W. Sisson, Jr., president of the American Paper and Pulp Association—"Influence of Technical Men in the Development of the Pulp and Paper Industry."

Robert B. Wolf, of the United States Shipping Board, Emergency Fleet Corporation—"Co-operative Measures in the Pulp and Paper Industry."

Winfred R. Robertson—"Personal Reminiscences."

As the number of tables to be provided is limited to an attendance of 150, members are urged to make early applications for seats to the Secretary, Thomas J. Keenan, 131 East 23rd Street, New York.

Canadian Waste Sulphite Liquor as a Source of Alcohol*

By

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About a year ago, when the manufacture of explosives was in full swing with no indications of an early ending of the war, Canada was buying millions of gallons of alcohol from companies across the border at a price double that of pre-war days. It seemed to many that this might be an opportune time to start an alcohol industry here in Canada using waste sulphite liquor as a raw material. The proposition was studied by the Imperial Munitions Board in conjunction with several of the Pulp and Paper companies and with the assistance of the Forest Products Laboratories of Canada, and the Honorary Advisory Council for Scientific and Industrial Research. At the request of Dr. R. F. Ruttan, Chairman of the Associate Committee on Chemistry of the Advisory Council, we made a study of a number of liquors supplied by the mills of Eastern Canada to find out how they compared with the European liquors, and those in the United States, as they are already being used for this purpose. The liquors were accordingly tested for acidity, gravity, total solids, ash, organic matter, total sugars, fermentable sugars and pentoses.

As some of the methods used may not be familiar they will be briefly described. The acidity was determined by a method recorded by Haegglund.¹

Twenty (20) cc. of the liquor are titrated with tenth normal sodium hydroxide until a drop of the solution added to filter paper moistened with an alcoholic solution of phenolphthalein turned slightly pink. The number of cc. of the alkali required represents the number of degrees of acidity. This is not the neutral point as measured by hydrogen ions, but it gives results which can be repeated and, therefore, a basis of comparison. The results obtained give an excellent basis on which to calculate the amount of lime necessary to reduce the acid sufficiently to make the liquor fermentable. The total solids, ash, pentoses and organic matter were determined by the usual procedure and will, therefore, not be described.

The total sugars were extracted by Krause's² method. Fifty (50) cc. of sulphite liquor are placed in a porcelain dish and a slight excess of barium carbonate, necessary to neutralize the acid present is added. Sand is then added to prevent the residue from forming a hard mass and the mixture is heated on a water-bath. When the mass becomes a thick paste it is treated with 60 cc. of 90% alcohol. The solution is boiled for 30 seconds with constant stirring. The dish is then removed and the solution allowed to settle. It is then filtered and the process repeated until all the sugar is extracted. The filtrate is transferred to a 500 cc. distilling flask and the alcohol boiled off. The last traces of alcohol are removed with the aid of a suction pump. The residue in the flask is made up

When the mass becomes a thick paste it is treated with 60 cc. or 90% alcohol. The solution is boiled to a definite volume and the sugar estimated volumetrically with Fehling's solution, observing the precautions given by Breckler³ and using ferrous thiocyanate as an indicator⁴. It may be interesting to state that a much more rapid method was found which gives fairly good results. This method consists of neutralizing the liquor and titrating it directly into the Fehling's solution using the ferrous thiocyanate as an indicator, same as before. The ratio of the non-sugar reducing substances to the sugars seems to be fairly constant, consequently, if the values obtained are reduced by ten per cent nearly correct results are obtained. The following table gives the figures for the two methods with the differences:—

Direct Titration		Alcohol Extraction	
2.99	Less 10%	2.69	2.77
1.6	"	1.44	1.47
2.75	"	2.47	2.5
1.87	"	1.68	1.67
1.67	"	1.5	1.5
1.5	"	1.35	1.3
2.18	"	1.96	2.02
2.24	"	2.01	2.02

The fermentable sugars were determined with a pure culture of Fleischmann's yeast. At the time this report was begun we did not have a culture of yeast accustomed to sulphite liquor and in order to make our results comparable we continued with Fleischmann's yeast. 100 cc. of the liquor were neutralized with soda to an acidity of 3 degrees. A suitable amount of phosphate and peptones were then added and the solutions sterilized at 100° C. When they were cool they were inoculated and kept at 29-31° C. in a thermostat. At the end of four days the solutions were filtered and the sugar again determined taking into account the slight concentration of the liquor during the fermentation. The loss in sugar was considered as the amount fermentable. As about 4% of the amount of sugar consumed is converted into glycerine, instead of alcohol, and as 180 grs. of sugar produce 92 grs. of alcohol, we find that 49% of the fermentable sugars gives us the theoretical production of alcohol.

The results of the analysis are given in Table 2.

On examining the specific gravity and total solids it seems apparent that samples 1, 2 and 7 had been diluted before they reached the laboratory; consequently, they were corrected in the more important constituents on the basis of the average total solids of the other liquors supplied by the same mill. The others are fairly uniform so far as these tests are concerned and compare favorably with the tests made in European countries. Ahrens⁵ gives 1.0465 for specific gravity; Wichelhaus⁶ 1.038; Lindsay and Tollens⁷ 1.055; while Walker⁸, who investigated Canadian liquors in 1913, recorded 1.05. The total solids record-

* This investigation was made under a grant from the Honorary Advisory Council for Scientific and Industrial Research, and formed the basis of the following address at the annual meeting of the Tech-

passed in those liquors where the sugar was low. To determine this point we analyzed two series of samples taken from the digester every hour starting with the fifth hour. One series was supplied by a mill which produced a high sugar to organic matter ratio and the other by a mill which gave a relatively lower ratio. The results are given in Tables 4 and 5.

TABLE 3

Sample	Length of Cook	Total Acid	Combined Acid	Free Acid
1	—	—	—	—
2	10 Hours	5.06	1.16	3.9
3	—	5.08	1.14	3.94
4	9 Hours	5.15	1.51	3.64
5	17 Hours	4.67	1.27	3.4
6	7 1/6 Hours	5.28	1.05	4.23
7	8 3/4 Hours	4.57	.9	3.67
8	7 1/4 Hours	5.31	1.03	4.28
9	8 Hours	5.15	1.06	4.09
10	7 3/4 Hours	5.05	1.02	4.03
11	8 Hours	6.00	1.40	4.60
12	8 1/2 Hours	5.78	1.10	4.68

TABLE 4
Cook "A"

Time Hrs.	Total Solids grs. per 100 cc.	Org. Matter grs. per 100 cc.	Total Sugar grs. per 100 cc.	% of Total Solids	Sugar % of Org. Matter.
5	4.5	3.6	.9	20.	25.
6	6.36	5.46	1.52	23.9	27.6
7	8.7	7.8	2.25	25.6	28.8
8	9.95	9.05	2.37	23.	26.2
9.15	10.8	10.	2.44	21.8	24.4
Combined Acid.	1.25				
Free Acid.....	4.03	Maximum Temperature	not Given.		
Total Acid.....	5.28				

TABLE 5
Cook "B"

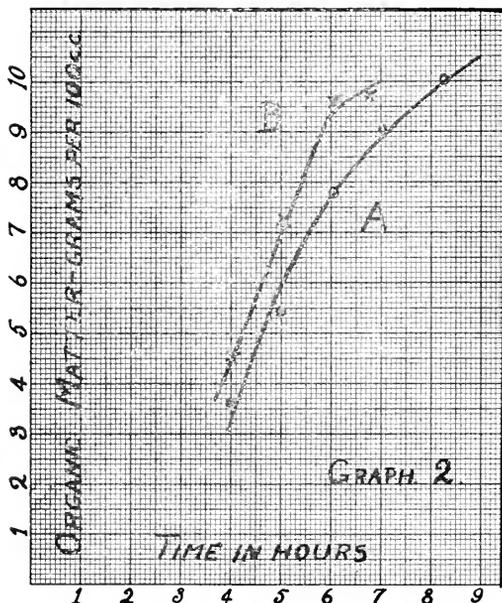
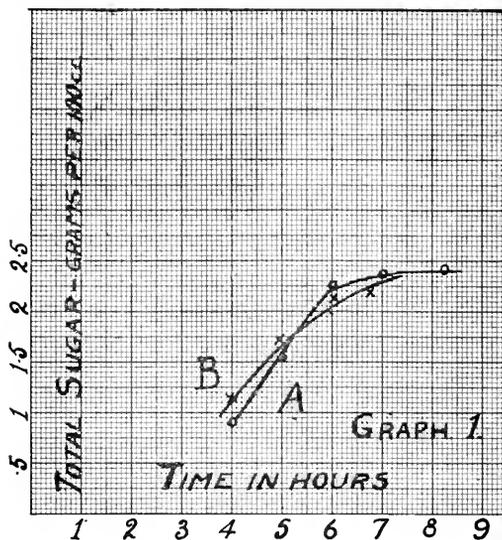
Time Hrs.	Total Solids grs. per 100 cc.	Org. Matter grs. per 100 cc.	Total Sugar grs. per 100 cc.	% of Total Solids	Sugar % of Org. Matter.
5	5.6	4.5	1.17	20.9	26.
6	8.3	7.2	1.69	20.3	23.4
7	10.7	9.6	2.15	20.1	23.1
7 3/4	10.8	9.7	2.2	20.4	22.6
Combined Acid.	1.09				
Free Acid.....	3.39	Maximum Temperature	145°C.		
Total Acid.....	4.48				

The results are also given in Graphs 1 and 2. It is at once apparent that no maximum in the amount of sugar has been passed in either cook. The rate of production of sugar between the five and the seven hours is about the same in both cases, amounting to more than fifty per cent of the total produced. The actual amount of sugar is about the same at the end of the 7th hour, but cook "A" keeps on increasing in sugar while cook "B" was blown shortly afterwards. No doubt cook "B" would also have increased slightly in sugar content had it been continued as long as the first.

It is obvious from the Graph 2 that the incrusting substances on the cellulose are going into solution much faster in cook "B" than in cook "A" in spite of the fact that the free acid is higher in "A" than in "B." The final amount of organic matter which goes into solution is about the same in both cases. It is also significant to note that the last 22 per cent of the organic matter in cook "A" produced only .19 grams of additional sugar, while the last 25.5 per cent of "B" produced .51 grams of sugar. We feel sure that this is due to temperature being rather high near

the end of cook "A", in the light of the data to be presented later on. The per cent. of sugar in the organic matter is also lower than in the other liquors supplied by this mill which points in the same direction. Had this ratio been the same as in former cooks analyzed the amount of sugar per 100 cc. would have been 2.8 at least.

We next estimated the mannin content of the wood and the amount of reducing sugar formed when samples of the woods used in the sulphite digester are



hydrolyzed with dilute hydrochloric acid. The samples were kindly supplied by the Canadian Forest Products Laboratories. They passed through a 60-mesh sieve, but were caught in an 80-mesh. We followed Schorger's method of estimating mannin explicitly. To determine the reducing sugars on hydrolysis we digested the wood as directed by Schorger¹³ in his mannin determination. The wood of the above degree of fineness was boiled with hydrochloric acid (Sp. Gr. 1.025) for three hours. When the wood was filtered and washed, the filtrate concentrated and extracted with 90 per cent alcohol and the sugars estimated as already described for sulphite liquor. The results are given in Table 6.

TABLE 6.

	Mannin % of bone dry wood.	Yield of reducing sugars calculat- ed as hexose % of bone dry wood.
Black Spruce	6.8	22.
Sample taken 2½ feet from ground, annual rings 119, average diameter 7¼ inches.		
White Spruce	7.5	22.
Sample taken 2½ feet from ground, annual rings 107, average diameter 8 1-16 inches.		
Balsam Fir	7.7	21.1
Sample taken 4¼ feet from ground, annual rings 47, aver- age diameter 7 1-16 inches.		

These results show that there is little difference in the sugar content of the various woods used in the sulphite process and that any marked differences in the liquors can not be attributed to the species of wood used. The per cent of reducing sugars formed on hydrolysis seems rather high and it is possible that a certain amount of the cellulose is changed to sugar. We did not investigate this possibility as we were merely interested in finding the relative amount of sugar produced from the three species under the same conditions. Twenty-two (22) per cent. of sugar would correspond to a carbohydrate content, having the general formula of C₆H₁₀O₅, of the wood of 19.8 per cent which is higher than the results usually given by other investigators. It is interesting to see what proportion of these sugars are actually found in our best liquors. As we do not have very accurate data on the volume of liquor in a cook our figures are only an approximation. It is usually assumed that 5 pounds of water are used for each pound of wood. The total volume for a ton of air dry pulp, or from 4,000 pounds of bone dry wood, would, therefore, be 20,000 pounds. On this basis sample 3, Table 2, would yield 532 pounds

of sugar from 4,000 pounds bone dry wood or 13.3 per cent. of the wood.

Effect of Temperature on Sugar Content.

Mr. Hovey of the Canadian Forest Products Laboratories suggested that further insight on the formation of sugars might be gained by making two experimental cooks and offered to make them during his spare time. We were pleased to have the opportunity of examining the liquors and consequently, two cooks were made on pure samples of wood in the experimental digesters of the Forest Products Laboratories. The description of the cooks and the results are as follows:—

SPRUCE COOK.

Weight of wet wood	600 grams
Weight of bone dry wood	463 "
Weight of pulp	271 "
Yield of pulp, 59.5%.	
Total time 11 hours.	
Total volume of liquor	4640 cc.
Total SO ₂	4.9 %
Combined SO ₂	1.23%
Free SO ₂	3.67%
CaO	1.08%

120 cc. samples were withdrawn through condensers every hour beginning with the 6th hour. The temperature was gradually increased so that it reached 136° C. by the end of the 7th hour. During the next three hours it varied between 136 to 140° C. after which it was raised to 152-155° C. The pressure was also gradually increased and kept between 70-77 pounds after the 7th hour.

BALSAM FIR COOK.

Weight of wet wood	600 grams
Weight of dry wood	480 "
Weight of pulp	272 "
Yield of pulp, 56.7%.	
Total time 11½ hours.	
Total volume of liquor	4690 cc.
Total SO ₂	5.38%
Combined SO ₂	1.29%
Free SO ₂	4.09%
CaO	1.13%

180 cc. samples were withdrawn every hour after the 6th hour for analysis. The temperature and pressure were the same as in the Spruce Cook.

These results show as well as the results of cook "A" and "B" that 50 per cent of the sugar is formed during a relatively short period of the entire cook, in this case between the 6th and the 8th hour. They also show that the incrusting substances go partly into solution as polysaccharides, which later become hydrolyzed as the ratio of sugars to organic matter is lower at the end of the 6th hour than at the end of the 8th. After the 8th hour, however, though the actual amount of sugar is still increasing, the ratio of sugar to organic matter is decreasing which means that some of the sugars

TABLE 7

Time Hrs.	Total SO ₂ %	Total Sugar grs. per 100 cc.	Total Solids grs. per 100 cc.	Org. Matter grs. per 100 cc.	Sugars x 100	
					Solids.	Org. Matter
6	3.50	.36	4.0	1.93	9	18.6
8	2.96	.86	5.9	3.83	14.5	22.4
9	2.80	.98	6.8	4.8	14.4	20.4
10	2.58	1.06	7.4	5.4	14.3	19.7
11	1.41	.88	8.1	6.37	10.8	13.8

At end of 10 hours 39.9 grams of sugar had been formed, or 8.3 per cent of the weight of the wood.

TABLE 8.

Time Hrs.	Total SO ₂ %	Total Sugar	Total Solids	Org. Matter	Sugars x 100	Sugars x 100
		grs. per 100 cc.	grs. per 100 cc.	grs. per 100 cc.	Solids	Org. Matter
6	3.52	.33	4.5	2.36	7.3	14.
8	2.55	.76	6.3	4.16	12.1	18.
9	2.2	.81	7.	4.94	11.6	16.3
10	1.73	.89	7.6	5.6	11.7	16.
11½	.75	.77	7.7	6.34	10.	12.1

are being destroyed. This destruction is especially marked after the 10th hour when the temperature was raised from 150-155° C. Here the actual amount of sugar decreased in both cases in spite of the fact that during the previous hour it was still materially increasing. This shows that the actual amount of sugar destroyed was greater than the difference between the final amount present and that present at the end of the 10th hour. The sharp decrease during this period of the ratio of sugar to organic matter illustrates the same point. It, therefore, seems clear that the temperature can not be increased much above 145° C. without very materially decreasing the amount of sugar present in the liquor.

These analyses also seem to show that Spruce gives more sugar than Balsam, as the ratio sugar to organic matter is very much higher in the Spruce than in the Balsam, i. e., both cooks have the same amount of organic matter in solution, but the Spruce cook has more sugar. The amount of free acid present in the Balsam cook was less after the 6th hour as it was necessary to relieve gas in order to keep down the pressure. This apparently did not prevent the incrusting substances from going into solution, but it did slow down the hydrolysis of these substances to sugars. This was proved by hydrolysing the liquor from both cooks at the end of the 9th hour as well as at the end of cook with dilute hydrochloric acid and then estimating the sugars again. The same amount of sugar, relative to the amount of wood used, was now present. This confirms our previous analysis of Spruce and Balsam that the amount of sugar present is about the same in both cases.

This suggested to us that the reason why samples 6 to 12, Table 2, had such a small amount of their organic matter in the form of reducing sugar, might perhaps, be due to the presence of polysaccharides. We, therefore, hydrolysed a number of liquors with 6 per cent hydrochloric acid for 30 minutes and then neutralized them and estimated the sugars again.

TABLE 9

Sample	Total Sugars grs. per 100 cc.	Total
		Sugar after hydrolysis grs. per 100 cc.
3, Table 2	2.77	2.8
7, Table 2	1.47	1.61
9, Table 2	2.1	2.25
12, Table 2	2.02	2.25
Cook "A", Table 4	2.44	2.68
Cook "B", Table 5	2.2	2.34

With the exception of the first one, they all increase in sugar from 8 to 10 per cent. Consequently, the reason that liquors 6 to 12, Table 1, are low in sugars relative to organic matter can not be explained by incomplete hydrolysis of polysaccharides, but must be due to the destruction of sugars during the cook. Just

what conditions are primarily responsible we are not prepared to say, as not all the mills supplied us with complete data in regard to their cooks and we did not have the time to make cooks on the laboratory scale to determine them, beyond the marked effect which temperature plays.

In conclusion, I wish to express my indebtedness to Dr. Jones, Acting Head of the Department of Hygiene, for permitting me the use of the Department's Laboratory of Bacteriology to make the fermentation tests, to Dr. Bates and Mr. Hovey, of the Forest Products Laboratories, for suggestions and especially to Mr. Hovey for making the cooks of pure Balsam Fir and Spruce.

Summary.

1—A dozen representative Canadian sulphite liquors were analyzed, the results of which showed that the best liquors contained as high a percentage of sugar as those produced in Europe. These should yield at least 1 per cent of alcohol by volume which is considered good practice in Europe.

2—A rapid method for the estimation of sugar in the liquors has been proposed.

3—The Canadian liquors fall into two sharply defined classes. The one has about 20% of its organic matter in the form of reducible sugars, and the other 28%. Our experimental results show that this difference can not be ascribed to a difference in the relative proportions of Spruce and Balsam being cooked, nor primarily to the strength of free acid used in the cook, nor to incomplete hydrolysis of the polysaccharides, but must be due to destruction of sugar in the cook.

4—The experimental results show further: (1) That the amount of sugar present does not reach a maximum; (2) That most of the sugar is produced before the end of the 7th hour; (3) That the temperature after the 7th hour is exceedingly important so far as the yield of sugar is concerned—the yield being very materially reduced if the temperature exceeds 145° C.; (4) That the first sugars to be destroyed are the fermentable ones.

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PAPER TRIBUNAL TO HEAR NEW EVIDENCE.

(Continued from Page 104.)

What the publishers were concerned in, he said, was to ascertain the cost and allow a fair return or reasonable profit. In reference to the Booth plant Mr. Tilley, in reference to what Mr. Henderson and Mr. Montgomery had previously said, stated: "They treat him (Mr. Booth) as requiring more capital than other mills." Thus Mr. Tilley argued that if Mr. Booth required more capital than other plants that proportionately he could get along with a lower rate of profit.

Proceeding along his original line Mr. Tilley went on to argue in support of the deductions the publishers claimed should come off the Booth costs which if allowed would reduce them to \$40.09. Even with a ten per cent allowance on this figure Mr. Tilley claimed that Mr. Booth would be making a bigger profit than he received before, and the price was being kept within the \$50 limit.

"My learned friend says we (publishers) were all wrong in power, and the suggestion was that you contracted for power and charged up so much per month," said Mr. Tilley. To illustrate his contention he took the power costs for the groundwood mill of Price Bros. He went on to maintain that if these costs were credited to the whole year that it would bring down the price by forty-two cents per ton.

On the matter of machine losses Mr. Tilley said that the United States investigation had shown that the losses in the American mills amounted to about 80 pounds per ton and in the Canadian mills about 71 pounds per ton. He referred at some length to the eight dollar increase which had been allowed by the Commissioner, claiming that it had been made on the theory that the costs would advance that much. Mr. F. A. Sabbaton, Mr. Tilley said, had testified that labor had advanced 15 per cent, which meant two dollars per ton of paper. Mr. Tilley took up an item in the Laurentide report, showing that the advance had been from \$5.30 to \$5.68, an increase of thirty-eight cents or 7.2 per cent. "We were told it was fifteen per cent. It is hardly half. This does not mean all the labor, but it is the only pure labor item we can find." Mr. Sabbaton also claimed a fifty per cent. increase in freight. "We cannot check that," said Mr. Tilley.

Spreading the Laurentide costs over July, August and September, Mr. Tilley said they averaged \$44.98, and on top of this Mr. Pringle had added eight dollars, making them \$52.98, whereas he claimed the later Clarkson report showed them to have been \$43.75—a difference of \$9.23 per ton.

Speaking on averaging the costs of the mills, Mr. Tilley said that if the average of cost and the average of profit was carried right through that it would work no injury. He went on to show that what perhaps one mill made on one item, another mill made on another, for instance, a mill near its wood supplies got cheaper wood, but to reach its customers in the old days it usually had to pay more freight.

During the close of the afternoon Mr. Tilley spoke in connection with the Fort Frances Company. He also touched upon the inclusion as "costs" by Laurentide of expenses in defending the anti-combine prosecution in the United States. The item amounted to \$2,523.91 per month, or about thirty cents per ton.

On Wednesday morning, in conclusion, Mr. Tilley referred to the situation which arose last fall when Mr. Pringle set his price after the Booth and Fort Frances

Companies had intimated they could no longer supply. Mr. Tilley, in the course of his remarks, said: "Mr. Pringle, as a person anxious to do what was right was naturally disturbed by anything that would cause an upheaval. One can understand the pressure such an attitude would have on a Commissioner. Our suspicion is that pressure meant the fixation of a higher price, and that the price actually fixed was brought about by duress. We do not criticize Mr. Pringle, for we, of course, appreciate his position."

Mr. Montgomery made a brief reply in which he asked the Judges if it was conceivable that men of the knowledge and standing such as John R. Booth and Sir William Price, thoroughly knowing their business as they did, would hazard their whole business by saying: "We cannot supply at the present price, and the Commissioner can take our mills and try it." Also they faced the prospect of the Government cutting off their export, if they had even been receiving such a price as the counsel for the newspapers had alleged.

In referring to the many details which Mr. Tilley had criticized Mr. Montgomery said that at the best such things would be a matter for cross-examination of manufacturers' experts, and that the arguments advanced could not be accepted as evidence.

Differentials Considered.

Following the conclusion of the appeals in the newsprint case as to the price, the appeals in the differential were taken up. On behalf of the Spanish River and other companies, Mr. Victor E. Mitchell, K.C., made a bitter attack on the Dominion Cabinet, and especially the order in council granting authority for the payment of differentials.

He maintained that the passing of the order was an unwarranted interference with international trade, and styled it "as a lamentable condition that we should have reached a point in this country when the rights of the individual are interfered with like that. It is a very serious day for Canada when the executive can commit such acts and we have to submit to them in silence."

Mr. Mitchell said he desired to make public protest against the invasion of individual rights. He believed it was the duty of counsel when he saw his client's rights infringed upon to protest. "We have never been able to get our views before the public because the publishers were interested in excluding them from their columns. I say the rights of these mills have been interfered with without justification."

After the position of the different mills had been placed before the Judges, it was argued that Fort Frances had a territory all its own in which the other mills could not compete on account of the necessity of incurring high freight rates. Further on Mr. Justice Middleton made the significant remark that the mills were to supply in their "due proportion" and not "proportion pro rata," and further that it could not be argued that Fort Frances' due proportion was not to take care of its own territory.

Mr. T. L. Phillips, of course, made objection stating that he hoped the members were still open for argument on the point. Mr. Justice Middleton said he was and that he had only made a "suggestion."

Mr. Montgomery on behalf of the contributing mills, went very fully into the history of the case, and described the situation as having been and still being an "intolerable" one. "If the Commissioner ever makes another order of this kind I do not know what will happen," said Mr. Montgomery.

HOW TWO CANADIANS VIEW EXPORTS.

There seems to be considerable superficial notion that Canadians and Americans have fallen heir to a great export market through the temporary demise of European competition. That some of our pulp and paper men are giving the matter searching attention is shown in the following extracts from the Financial Times of Montreal.

T. J. Stevenson on Lack of Shipping.

T. J. Stevenson, Sales Manager of The Riordon Pulp and Paper Co., condemns it as a weakness in Canadian commercialism in waiting for something to turn up—the best policy is to go out and get the business at once.

The Paper business in Canada is not over brisk, but of course this is the inventory period, and directly that is finished orders will come in both for foreign and home trade. Although both pulp and paper would be at a high price for some time he looks for a lot of business by the end of February. Everything points to the price of paper continuing on the upward grade. In the first place the cutting of pulp wood shows a big shortage—in fact, the trade had for two years been short of many necessities for the carrying on of their business.

All contracts for pulp wood, chemicals, etc., are contracted two years ahead, and until these run out, and prices right themselves, the cost of paper cannot very well decrease.

"The Canadian mills do not fear competition if they can get shipping transportation. The Riordon Co. want to ship one million dollars worth of product this year, and means to do it, but we lack ship space. There is little help coming to us from Europe. One day some one will wake up to the fact that Canada wants ships at reasonable freights to export her manufactures. At present, preference seems to be given to Sweden—a pro-German country. When the powers that be have time to remember that Canada has a lot of paper to export to Europe and will give the manufacturers reasonable freight rates, we are prepared to go ahead and ship a lot of stuff for which we already have a market," said Mr. Stevenson.

One client of his firm, who had eight steamers at the beginning of the war, have but one left now—the others have all been sunk—and the remaining vessel is being sent to Canada to carry away paper. In short, Canada does not fear competition if she can get transportation. Australia is becoming a factor in paper purchases and a big trade will spring up there—but, here again, the question of transportation comes in to prevent our market spreading. Orders from all parts of the world are being received in surprisingly large numbers for all classes of paper. Directly Canada can get anything like pre-war prices for shipping, the paper trade here is going to have a very good time indeed.

In regard to lumber and the big orders given by the Allies to Canada, there is plenty of cut lumber stowed away in the Eastern Provinces, and there will be no shortage here in consequence of this big demand.

There is a scheme on foot, Mr. Stevenson believes, for a kind of reciprocity in paper and pulp between the United States and Canada. If such should come to pass it will of course mean the elimination of many small mills making writing and small paper, but in the end such an agreement is bound to benefit the consumers. The scheme, however, is not definitely formed yet, but such a plan might be of decided bene-

fit to Canada.

C. Howard Smith Optimistic.

C. Howard Smith, President of the Howard Smith Paper Mills Co., wishes to be put down as an extreme optimist in connection with the future commercial development of Canada, and especially in regard to the paper industry. While he could do with more labor, he personally has no anxiety as to future labor troubles.

His firm has always paid good wages, and he cannot foresee any reduction coming in the pay of workers. In no industry can wages decrease until food is lowered in price, and he sees no sign of that at present. Rather, he looks for an increase of wages, especially in Europe. Workers there are not going to be contented with the rates they have been paid in the past, and will demand substantial increases. This will help Canada a lot in her export trade, as it is the high rate wage which makes production here so expensive as contrasted with that of Europe.

In regard to the export of paper, Canada can now put a lot of paper into Europe if we can get freight at a reasonable price. The Government, he understands, fixed the Ocean rates—and if that is the case some one is giving a preference to Sweden—a country which has been pro-German during the whole period of the war. At present, the freight from Canada to Europe is eight times as great as from Sweden to England. And further, owing to present arrangement, Sweden is allowed to export to South America at a far lower freight rate than is Canada. It is a scandal that this should be the case, but that is how matters stand at the present time. However, things should right themselves, and Mr. Smith sees for Canada a tremendous future in the paper industry both for home and foreign consumption.

HOW MOVING NASHWAAK MOVES ST. JOHN.

The St. John, N.B., "Standard," regrets the contemplated removal of the Nashwaak pulp mill from the city to Marysville, but does not consider it proper or possible for the city to do anything to prevent it. As against possible advantages to the company in the matter of labor costs, insurance and taxes and being nearer their raw material, the "Standard" has the following remarks to make in regard to citizens of St. John who work at the mill:

This industry gives employment to from one hundred and fifty to two hundred persons, of whom a considerable number are middle-aged and have been in this employment for a long time. In so far as the younger employees of the company are concerned, they can undoubtedly find positions elsewhere and in other lines, but the older class of men will experience difficulty in adjusting themselves to changed conditions, and the loss of their regular work may, in some cases, result in direct hardship."

The dam will probably be built by the Amberson Hydraulic Construction Company, of Montreal. It is not expected that the site of the old dam which was located at Marysville when the Gibson company operated lumber mills there will be used.

This location will do away with towing logs as done at present. A new mill might cost \$400,000.

A NEW SEMI-WEEKLY IN MONCTON.

L'Evangeline of Moncton has changed from a weekly to a semi-weekly, and increased its subscription rate to \$2.

FOREIGN GOODS IN GREAT BRITAIN—OPPORTUNITY FOR CANADIAN PRODUCTS.

This brief account of some possibilities for Canadian trade in pulp and paper with and through Great Britain was sent us a short time ago by Major Barlow & Son. In subsequent articles the Pulp and Paper Magazine plans to introduce in a more personal way to its readers a number of firms who are in a position to handle Canadian products in Great Britain and elsewhere.

It is now many years since wood pulp was first imported into Great Britain—approximately, about sixty years ago, and paper of wood pulp, some fifty to fifty-five years ago.

Paper made from pulp was in those days unfamiliar with many, and it was not for some years that it was generally purchased, the Trade preferring the domestic article.

There have been many changes in production, starting with machines fifty to sixty inches wide, and these have now reached a width of 160 to 180 inches, and even beyond, with an enormous total production which has grown so stupendous that well may the man unacquainted with the Trade, rub his eyes and wonder what becomes of all this output. The grades of paper and board also made from this material have gradually grown until they can be numbered in the hundreds, and now papers are made and have an enormous sale in substance varying from 20 x 30 — 5 lbs. per ream of 480 sheets or twelve grams per square metre to 20 x 30 — 150 to 200 lbs., or 370 to 500 grams, and varieties such as mechanical paper, thin tissues, M.G. and unglazed, sulphite, bag papers, kraft browns — although why should we adhere to so "Hunnish" a term for this latter paper, the trade may explain, when there are so many we could derive from Allied countries, such as "Forte" or "Forza" Paper, etc.—greaseproof and parchment papers, banks, writing papers, embossed papers, woodpulp and imitation leather boards—plain and embossed, coated boards, etc., etc.

The prices of these grades have also varied even before war, for many years. There has invariably, due to keen competition, been a tendency for prices gradually to fall, until many who had to deal with finding markets for these with a living margin, came to wonder if paper would in years to come, ever be given away, or nearly so. Since the war, however, with the ever-increasing cost and scarcity of coal, materials, chemicals, colors, etc., there has been a rapid change which is also largely due to diminished output of mills and restrictions on imports, bringing in its train in recent times, almost a panic in securing supplies.

Although much foreign made paper and boards finds its way to the British and Colonial markets — doubtless, with the probability of these markets being closed in the future to the enemy countries, there presents itself a vast field for enterprise to the Canadian Pulp and Paper makers, if full advantage of the natural resources nature has endowed them with in the extensive forests of timber, is taken and opportunity seized for enlarging their plants, and other companies in building mills, and diverting a large trade, formerly in German and Austrian hands, to this one of our most prosperous colonies. This will generally be considered an opportune time for Canada to take advantage in extending its pulp and paper output and prepare for the after-war trade, of which there must be a large one for the progressive manu-

facturers, who are looking into the future and who are seeking to extend their markets.

With the enormous material resources in our Colonies, there is no reason whatever why Great Britain, with the assistance of her colonies which build up our Empire, should not be self-supporting in the supplies of pulp and paper, and not depend in the future upon enemy supplies and "dumping" and thereby further assist in binding the Empire, and eliminate the enemy competition upon our own ground. There are many grades of paper which the old country in the past looked to the enemy to supply, and which with foresight and industry should be manufactured equally well in our own Empire, and would be bought with better grace knowing they were our own make.

ANOTHER NEWFOUNDLAND PAPER MILL.

Another pulp and paper industry will be started the coming summer on the Terra Nova River, inside Alexander Bay, B.B., by Captain Storm, a Norwegian formerly of the firm of Storm and Parks, who were contractors for several years past for the A. N. D. Co. at Botwood. They dissolved partnership about two years ago, and after a visit to Norway Capt. Storm returned to Newfoundland with a view to locating the best timber area for the erection of a pulp and paper mill. He covered on foot the whole country from Grand Falls to Bay d'Espoir, 140 miles. He subsequently crossed the Terra Nova country and found the location and the timber that suited his purpose. In February of last year he enlisted the interest and sympathy of some Norwegian friends of high financial standing, and the result is that all the capital required has been subscribed and work will begin early next summer. A hydraulic engineer has been over the territory where they intend to operate and all the conditions have been pronounced satisfactory. It will mean the expenditure in two years of at least a million dollars, and a wage earning power to the country of about \$750,000 a year. Capt. Storm, who is in the city at present, leaves shortly for Norway and hopes to return next June.—St. John's, Nfld., Trade Review.

EXPORT POSSIBILITIES IN PAPER.

A lively enquiry for export is being experienced by the Rolland Paper Co., Limited, Montreal. "These enquiries," states R. H. Eeclstone, advertising manager, "come from all parts of the world, and some of them from quarters where, we believe, permanent trade can be established. This business, if maintained, will lead to greater production and eventually tend toward a reduction in the cost of manufacturing, enabling Canadian mills to compete still more successfully. We may say that during the war we have been carrying on our business with the idea in mind that opportunities would still be greater after the war, and we see no reason to change that idea now."

Do not work with defective chains, cables, tools, or appliances of any kind, or in an unsafe place. Carefully examine same and report dangerous conditions to your foreman.

Do not turn on any electricity, gas, steam, air, acid or water, or set in motion any machinery, or throw down any material, without first seeing if anyone is in a position to be injured, and all safety guards are in their proper place.

Technical Section

Of the Canadian Pulp and Paper Association

Please note correction on page 104 for table in Mr. Stadler's article on costs of motor installation.

REVIEW OF RECENT LITERATURE.

A-3. Pulp possibilities of rice straw. Paper 23 (1918) No. 8, p. 21. From Bulletin of the Imperial Institute reproduced in the Paper Maker and British Paper Trade Journal.—E.K.M.

A-9. A bleaching powder for hot climates. Paper 23 (1918) No. 12, p. 15-16. From World's Paper Trade Rev. In experiments carried out in the laboratory at temperatures well within the limits of tropical variations the deterioration of bleaching powder is very considerable, and increases rapidly with rise of temperature. At 98° F. 96 per cent. of the efficiency of the bleaching powder measured as "available chlorine" is lost in eight weeks, while at 113° F. a temperature encountered in an Egyptian summer, the same loss is encountered in two weeks. The decomposition is due to moisture in the bleaching powder. It is difficult to remove this moisture by desiccation even in vacuo over sulphuric acid. By mixing freshly ignited quicklime with commercial bleaching powder the authors prepared a dry powder which, when exposed to a temperature of 113° F. (45° C.), loses from 3-10 per cent. of its efficiency in three months, instead of as with ordinary bleaching powder under similar conditions, the whole of it in three weeks.—E.K.M.

A-12. Corn cob adhesive. F. B. La Forge, U. S. Dept. Agri. Paper 23 (1918), No. 8, p. 16-17. Corn cob adhesive is an indefinite mixture, probably consisting chiefly of pentosans which have been partially hydrolyzed and dissolved from dry field corn cobs by treating with water under pressure. It is usually employed in a concentration of about 60 per cent. solids. The extract seems to be acceptable as an adhesive in the manufacture of fibre box board, corrugated fibre board, etc. The adhesive seems to possess nearly twice the covering power per unit of weight as silicate of soda. Only a rough estimate of the cost of this material can be determined by laboratory experiments. It is probably, that, from the total data which is available, the cost of producing corn cob adhesive would not be more than \$5 a ton.—E.K.M.

N-14. Estimation of asbestos paper. Paper 23 (1918) No. 5, p. 19-20. From Chemist-Analyst. The following analyses of the paper have given reliable results as to the actual composition of the sheet moisture, total combustible ingredients and starch.—E.K.M.

A-15. The fluorescent properties of cellulose. Paper 22 (1918) No. 10, p. 15. Through J. Soc. Chem. Ind. 36, 18. Researches by S. J. Lewis that demonstrates the fluorescence of cellulose and its derivatives.—E.K.M.

B-5. Motor-driven saw for felling trees. Paper 23 (1918) No. 8, p. 15-16.—E.K.M.

B-7. Production of pulp on balsam lands. Edward F. McCarthy and Raymond J. Hoyle, Dept. Forest Utilization, N.Y. State College of Forestry, Paper 23

(1918) No. 7, p. 14-18. Summary: (1) That swamp balsam lands are well able to care for themselves and will continue to produce pulp timber when cut over; (2) that removal of less valuable trees would increase the volume production of balsam and should be given attention; (3) that extreme liability to windfall even in virgin stand is a strong argument in favor of complete utilization to the lowest merchantable size; (4) that natural reproduction will care for the future crop if fire is kept out; (5) that these lands may be expected to produce a cord of pulp per acre per year without excessive care. No other type in the northern forest can be managed as easily as this one.—E.K.M.

C-7. Improvements in barking drums. Paper 23 (1918) No. 8, p. 19-21. An account of the improvements effected in the construction of the American Barking drum. Illustrations.—E.K.M.

E-2. The disposal of waste sulphite liquor. Paper 23 (1918) No. 5, p. 18-19. From Chem. and Met. Eng. Oct. 1, 1918. Pat. issued to Jacob Robeson in 1906 known as Robeson process. The process roughly consists in neutralizing the liquor and evaporating it to a thick syrup or to dryness under reduced pressure. The ligneous spruce product is sold under the trade name of glutrin. It is in substance the sulphonated lignins neutralized with lime and magnesia, with other bases substituted or the lime removed for special purposes by processes patented and controlled by the company. The gum has an unusual affinity for clay and the manufacturers set out to introduce the product as a road binder. Portland cement with sharp sand in volume 1-3 breaks approximately at 200-230 lb. Glutrin with sharp sand mixed with 15% clay shows the same tensile strength in volume of 1 to 25. Other uses are coming to the fore.—E.K.M.

F-4. New black liquor recovery process. Paper 23 (1918) No. 10, p. 16-18. U.S. pat. No. 1, 279, 604, issued to O. G. Stage, Three Rivers, Quebec, covers certain steps in the treatment of pulp, black liquor and transference of gases.—E.K.M.

F-5. Indirect cooking by forced circulation. Dr. Albert E. Nielson. Paper 23 (1918) No. 10, p. 11-15. The Morterud system of cooking chemical pulp indirectly with forced circulation. The following are discussed: a comparison of methods: revolving digesters; stationary digesters without forced circulation; indirect cooking with stationary digesters equipped with steam coils without forced circulation; indirect cooking with steam coils inside the digesters with forced circulation by injectors; indirect cooking with stationary digesters equipped with the Morterud system with forced circulation; and the Morterud process. The more the direct cooking is forced, the more overcooking takes place at the bottom of the digester, and the greater the heat loss. Actual tests have shown that the strength of the pulp by the indirect cooking process with forced circulation is 15 per cent., and the yield 8 to 12 per cent. higher than by direct cooking. The difference in consistence of the black

liquor by direct cooking and indirect cooking is about 5° Be; the coal consumption is reduced 25 to 35 per cent.; the alkali consumption is reduced 10 per cent.; the number of rotary furnaces is reduced 50 per cent.; and the digester equipment 30 per cent.—E. K. M.

H-5. Chlorinated lime vs. electrolytic bleach. Paper 23 (1918), No. 9. From Papirfabrikant, through London Paper Maker. Comparative bleaching properties of electrolytic and lime bleaching solutions. The results for the saving in chlorine depend upon the special working conditions. In the case of two hollanders the writer observed the value 19 per cent., given as the saving of electrolytic bleach, but would not say this was a normal value. As to the advantage in the comparison of electrolytic and chloride of lime bleach in the bleaching of cellulose there is no doubt. If the chlorine saving is small the proof is at hand, nevertheless, that the electrolytic bleach has a better effect than the chloride of lime bleach.—E.K.M.

H-5. Guide to the bleaching of pulp and paper. James Beveridge. Paper 23 (1918) No. 8, p. 11-15. Processes for the bleaching of vegetable fibres in the pulp and paper mill.—E.K.M.

K-23. Points concerning water-proofing materials. Paper 23 (1918) No. 12, p. 14. Abstract in J. Soc. Chem. Ind. from India Rubber J. The author had examined samples classified as manufactured by processes involving the use of the following: (1) aluminum soaps; (2) asphaltum paraffin, pitch, etc. (3) cellulose dissolved in cupraminonium solution and other forms of dissolved cellulose; (4) drying oils; (5) two layers of fabrics with an intermediate adhesive layer. His conclusions are: (1) Basic aluminum acetate and saponified linseed oil yield a specially durable product. The fabrics have a good water repellent surface, but do not stand rough handling well. (2) Asphaltum is a good material for the purpose. Disadvantages of paraffin are that it tends to become brittle and to favor the growth of mildew. Rosin and wool grease are unsatisfactory admixtures. A solution of rubber in melted paraffin gives good results. (3) Objections to this process, (cellulose solution), are that it is expensive and that fabrics are harsh, and are liable to give off an irritant dust when handled. They strongly resist the growth of mildew. (4) These fabrics are liable to spontaneous combustion, and almost invariably crack as the result of repeated creasing. (5) The middle layer of double fabrics must be possessed of good waterproofing and lasting properties. Poor rubber, for example, is of no value. For testing waterproof quality, the sample is stretched over the mouth of a bottle and a spray of water (e.g., from a Gooch crucible) allowed to fall on it from a height. The time which elapses before the first drop passes through, and the amount passing through in a given time are noted; or the material is folded into a pocket which is then filled with heavy articles and immersed in water. A good fabric should not wet through in twenty-four hours. Samples should not develop mildew growth in five days when suspended in a desiccator containing a variety of such growths. The effect of temperatures of 0° F. and 120° F. for eight hours upon the waterproof quality of samples should be determined. A chemical examination should also be made.—E. K. M.

N-0. Apportioning the costs of power. B. M. Bancroft. Paper 23 (1918) No. 6, p. 13-14. Some of the difficulties and how to overcome them in building a

power cost system.—E.K.M.

N-0. Factors in fuel economy. Robert H. Kuss, Paper 23 (1918) No. 5, p. 21-23. Abstract of paper on the subject of coal conservation presented before the Detroit Section of the Am. Soc. of Mech. Eng. Reproduced from Jour. Am. Soc. Mech. Eng. for Oct., 1918.—E.K.M.

R-1. Chemical developments in a paper mill. Paper 23 (1918) No. 10, p. 19. Through Canadian Forestry J. A. concise account of the chemical developments in the pulp and paper plant of the Brown Corporation at Berlin, N.H.—E.K.M.

R-3. Cost accounting. S. L. Bush. Paper 23 (1918), No. 7, p. 11-13. How to govern and show expense in a productive department.—E.K.M.

R-7. Productive labor. John Balch. Paper 23 (1918) No. 6, p. 15. Method of determining machine labor costs and productive labor costs.—E.K.M.

R-0. Africa and the Pulp and Paper Industry. (L'Afrique et l'industrie de la cellulose et du papier), Le Papier, No. 7, p. 121 (1918). An article studying the possibilities of the Pulp & Paper Industry in Africa and Treatment of "Baobab" as a source of supply investigated.—O. R.

GROUNDWOOD YIELDS.

The following interesting figures on the production of groundwood from various Canadian species were compiled by R. O. Sweezy.

Species: Yield of pulp per 100 cu. ft. solid rossed wood. (Bone dry basis.)

Balsam fir	1908
Red fir	1915
White fir	2007
Alpine fir	2068
Amabilis fir	1872
Lowland fir	2153
Noble fir	1920
Eastern hemlock	2030
Western hemlock	2160
Tamarack	2620
Western larch	2100
Lodpole pine	
Montana	2136
California	1926
Western yellow pine	2061
Jack pine	2126
Lodgepole pine	
Fall cut	2503
Spring cut	2405
White pine	1885
Englemann spruce	
Montana	2250
Colorado	1965
Sitka spruce	2040
White spruce	2400
White birch	2954
Poplar	2168
Black gum	2612

PAPER MILL FOR CLARKE CITY, P. Q.

"Le Moniteur de Commerce," Montreal, is informed that the Gulf Pulp and Paper Co., of Clarke City, is seriously considering the erection of a paper mill to use the pulp they produce.

When carrying bars or other material out of doors, be careful so as not to strike persons passing by.

UNITED STATES NOTES

Applications for the use of 115 enemy owned acid and dye patents have been filed with the Federal Trade Commission. The du Pont de Nemours Company is seeking the use of forty-eight patents on acid dyes, bringing their total of applications for enemy owned patents up to 208. The National Aniline and Chemical Company, Inc., New York, filed 142 applications for the use of enemy owned acid dye patents and the process of making them. Applications for twenty-five ammonia patents were made by the Semet-Solvay Company.

A brief shut down at some of the mills in the northern New York district is strongly probable in the immediate future. Unsettled market conditions due to order shortage usually prevalent at this time of the year have created a situation that has reflected upon operations at the mills. Several of the mills have temporarily suspended operations while machinery is being taken down for repair. The order shortage is not being felt by the newsprint mills to any marked extent. The manufacturers of other grades are mostly affected. The mills of the St. Regis Paper Company and the Taggart Paper Company are still running full time.

More than \$8,800,000 of the \$11,000,000 first mortgage sinking fund of 5 per cent. bonds of the American Writing Paper Company, due on July 1, have been deposited under the deposit agreement. The committee points out that the proposed new issue must be taken by the present bondholders, as it has been impossible to arrange an underwriting of the issue. Time for the deposit of the bonds has been extended until the close of business on February 20.

The offices of the Federal Paper Company at Bogota, New Jersey, were completely gutted by fire last week, causing a loss estimated at \$5,000. Prompt response to an alarm by the Bogota and Haekensaek fire departments and effective work kept the blaze from spreading to the plant of the American Paper Mill. Though the Federal offices were completely razed by the fire, all valuable papers in the safe were found intact.

A permanent association of card board manufacturers was formed recently at a formal meeting of leading card board men at the rooms of the American Paper and Pulp Association in New York. J. B. Van Horn, of the Holyoke Card and Paper Company, was elected to serve as temporary chairman. J. A. Lowe, of the Falulah Paper Company, Fitchburg, Mass., was chosen temporary secretary. Lowell Emerson, Rhode Island Paper Company; J. H. Connor, American Coating Mills, and J. M. S. Ewing, of the A. M. Collins Mfg. Co., Philadelphia, were appointed to serve as an organization and nominating committee to report later at a meeting to be called during the American Paper and Pulp Association convention next month.

An extra dividend of two per cent. has been declared upon the stock of the Union Bag and Paper Corporation, payable in Fourth Liberty Loan Bonds on February 15th for amounts more than \$50.

The Sterling Paper Company, which recently had to dismantle its plant at Hamilton, Ohio, due to flood prevention improvements, is planning the construction of a new mill at Hineckley, N.Y. All the machinery from the abandoned plant at Hamilton is being sold, and complete new equipment is to be installed at the Hineckley mill. The Sterling interests are to be allied at Hineckley with those of the Hineckley Fibre Company.

Annual reports of Kalamazoo Valley paper concerns reflect remarkable trade activities during the past twelve months. One of these, the Kalamazoo Paper Company, just closed one of the biggest years it has had since it began operations. Through its combination with the Riverview Coated Paper Company it now operates three paper mills and two coating mills. The latter are equipped with twenty-four coaters. From six to seven hundred people are in the concern's employ, and the paid in capital stock \$1,605,000. The consolidation has brought the number of directors from five up to ten. The officers named for the ensuing year are: F. M. Hodge, president; D. F. Altland, vice-president and A. E. Curtenius, secretary-treasurer.

The Whitaker Paper Company of Cincinnati, is planning to increase its capital stock from \$1,000,000 to \$2,500,000. This stock, all of which is to be issued as common, will be taken up by the present stock holders. None of it will be offered for public sale. A. L. Whitaker, president of the company, has just announced the purchase of the Peters Paper Company of Denver together with all of its business. A cash consideration of approximately \$500,000 is said to have figured in the deal. The Denver plant is to be added to the list of branches of the big Cincinnati wholesale paper house. The personnel of the Peters organization is to be retained. The Whitaker Company now has branches in nineteen of the leading cities in the United States.

IMPORTATION OF WOOD FROM CANADA BY OCEAN SHIPMENT.

The War Trade Board announce that the restriction placed by W.T.B.R. 284, issued October 21, 1918, as amended by W.T.B.R. 318, issued November 13, 1918, on the importation of wood, as classified under Paragraph 647 of the Tariff Act of 1913, except cedar and balsa wood, and also the restriction placed by W.T.B.R. 273, issued October 17, 1918, on the importation of balsa wood, have been modified to permit the issuance of licenses for the importation of all wood therein described, when originating in Canada and coming by any means of transportation. Import licenses, therefore, may now be issued for ocean shipments.

If you make an opening, or remove the cover from any opening, in floor, ground, valve pit or sewer, guard that opening so no one can fall into it.

Many a man who takes a chance wishes he could put it back.

PULP AND PAPER NEWS



The Abbotsford Lumber, Mining and Development Co., Limited, has been incorporated with headquarters at Abbotsford, B.C., and a share capital of \$1,000,000 to import, export, sell, grow and deal in saw logs, timber, lumber, wood pulp, and paper of all kinds.

J. J. Gibbons, of Toronto, who is widely known in the newspaper and publishing arena through his long connection with publicity work, has been elected President of the Ontario Motor League.

A new monthly is being issued by the Presbyterian Church of Canada, which is known as "The Forward Movement." The paper gives information with respect to the work of the church in all departments, and is issued in Toronto.

J. F. B. Livesay, assistant general manager of the Canadian Press, Limited, Winnipeg, who has been overseas since last August with the Canadian corps in France, has returned to Canada.

T. M. Kinsman, of Toronto, has been appointed advertising manager of the Men's Wear Review, and has entered upon his new duties, succeeding Gordon Rutledge, who has been made manager of the Financial Post, Toronto.

An interesting event to the four hundred delegates, who attended the twenty-fifth annual convention of the New York State Retail Lumber Dealers' Association held at Buffalo, N.Y., during the past week, at which a number of Canadians were also present, was the visit on January 24 to the plant of the Beaver Board Companies at Thorold, where several hours were spent. The visitors were shown through all the departments, and were greatly surprised at the spaciousness and equipment of the plant.

Reports received from New Brunswick are to the effect that, owing to the shortage in labor at the commencement of fall operations, the outbreak of the flu subsequently and latterly the absence of snow and the extreme mild weather, the cut of timber and pulp wood will be 50,000,000 feet less than last season, when, it is estimated, that there was a falling off of some twenty-five per cent.

Rev. T. S. Linscott, who for many years has been head of the Bradley-Garretson Publishing Co., of Brantford, Ont., passed away last week, aged seventy-four years. He was widely known in publishing and newspaper circles throughout the province and his demise makes another break in the ranks of the veterans.

Joseph G. Mayo, resident manager of the Mattagami Pulp and Paper Co., Smooth Rock Falls, Ont., spent a few days in Toronto this week on business.

The third digester at the plant of the Mattagami Pulp and Paper Co., Smooth Rock Falls, Ont., has been installed. The company will add another drying machine, and also a baling machine for baling the output of the mill for export purposes. When the additional equipment is in position the production will be 150 tons a day of easy bleaching sulphite.

The Thorold Board of Trade, of which E. P. Foley, of the Foley-Rieger Pulp and Paper Co., is President, intends tendering a banquet on Monday, February 3rd,

to E. W. Beatty, K.C., of Montreal, now President of the Canadian Pacific Railway. Mr. Beatty is an old Thorold boy of whom the town is justly proud. The purpose of the banquet is to advertise the industrial possibilities of Thorold and vicinity, and also to do honor to Mr. Beatty, who will be the guest of the evening.

A. G. Pomsford, of Port Arthur, general manager of the Port Arthur Pulp and Paper Co., spent a few days in Toronto this week on business.

L. B. Beale, Lumber Commissioner, of British Columbia to Great Britain, and formerly manager of the British Columbia lumber office in Toronto, is returning to the Dominion next month, and will spend some time in Toronto and Montreal before assuming his new duties as British Trade Commissioner in Western Canada, where he will have jurisdiction over the territory between the Pacific Coast and Winnipeg, which will be his headquarters.

The Forest Protective Association, Limited, has been incorporated with head office in Quebec, and a capital stock of \$10,000 to exchange ideas and consult regarding the best methods of formulating, installing and operating a thoroughly efficient system to safeguard the forests of the province. The incorporators include W. Gerard Power, St. Paeome, Ellwood Wilson, Grand Mere, and R. P. Kernan, of Quebec.

Mr. John Martin, president of the John Martin Paper Co., Limited, Winnipeg, is reported to be slowly improving in health. Mr. Martin has been confined to his home for several weeks, suffering with an enlargement of the heart.

Mr. Geo. Wilson, of Clark Bros., & Company, Winnipeg, who is so well known among the mill men in Eastern Canada and the United States, has gone to California to recuperate, after a serious illness of many weeks' duration. Late advices indicate that the change is greatly improving his condition.

The T. Eaton Co., Limited, recently gave an exhibition of the manufacture of envelopes on the ground floor of their store in Winnipeg. The machine and operators were furnished by the Barber-Ellis Co., Limited.

Mr. John Perse, of Tees & Perse, Ltd., who represent the E. B. Eddy Co., Ltd., in Western Canada, is at present visiting the mills in Eastern Canada.

President George Chahoon, of the Laurentide Company, is back at Grand' Mere, and, as usual, is putting more "pep" into the whole force. His welcome back to Canada after strenuous service in war work in the United States is not limited to Grand' Mere. The whole industry is proud of Lt.-Col. George Chahoon, man, paper-maker, patriot. A lot of other soldiers are coming back to Grand' Mere, and their remarks indicate that there may have been times when a touch of home-sickness for the Laurentian town would have been admitted.

J. A. Sabbaton and L. W. Campbell were in Ottawa last week attending the argument of the appeal in the newsprint case from the decision of the Paper Controller to the three judges constituting the appeal tribunal.

To the correspondent of the Pulp and Paper Magazine Mr. Pringle stated Monday that he had not yet fixed a date for the continuance of the inquiry before him. What will likely be done will to have Mr. Clarkson go over the mills again in connection with the points that the publishers desired further information upon. How long this will take is a question, one guess seems as good as another.

E. Newell, general manager of the Dominion Envelope and Carton Co., Toronto, and wife, are spending several weeks at St. Petersburg, Florida, and enjoying the southern sea breezes.

The Montreal branch of the Victoria Paper and Twine Co., Limited, of Toronto, is now fully established in its new warehouses at 127 St. Maurice St., and 382 Notre Dame St. W., Montreal. The removal was made necessary owing to increase in business, and, in their larger premises, the company are carrying a heavier and better assorted stock. Alex. McRae is the manager of the Montreal branch.

Toronto jobbers have been notified of a decided drop in the price of jute twine, which has fallen from four to eight cents a pound, and it is hinted there may be still further declines. The manufacturers hope that business in the twine line will now be on a normal footing free from the artificial disturbances of the past two or three years, and believe the quicker normal relations between buyer and seller, producer and consumer are restored, the more speedily will trade be placed on a solid and progressive footing.

The new, modern wax paper plant of the Garden City Paper Mills Co. of St. Catharines, is busy at the present time, and has equipment to turn out ten tons of wax paper per day. The plant is located at Merriton, Ont., and is known as plant No. 2. There are two railway sidings to the industry, which generates its own electric power from plant No. 1. The equipment is the latest out, and the construction has been planned for both speed and efficiency.

SCANDINAVIA IS CANADA'S RIVAL.

The past, present, and future relations between Canada and Scandinavia are thus reviewed by the Toronto "Star":

Scandinavia is and will be Canada's chief rival in the pulp and paper market of the world. Hitherto Canada has had a monopoly of the United States market, and will undoubtedly maintain this, while Scandinavia has had a firm hold in the European market. This hold has been partly shaken due to Scandinavia's doubtful attitude in the war. If Canadian companies can meet the competition of its rival, Britain's trade is ours and a large share of the markets of continental Europe will be open to Canadians as a favored people. The exports of wood-pulp from Sweden in the first seven months of 1918 were 345,715,355 kilos, (1 kilo equals 2.02 pounds) as against 285,324,327 kilos in 1917, 548,244,538 kilos in 1916, 455,485,209 kilos in 1915, and 501,251,428 kilos in 1914.

MORE PULP MILLS FOR B. C.

"We are now taking stock of the pulp resources of the province with a view of interesting more capital in the pulp industry," stated Hon. Mr. Pattullo, Provincial Minister of Lands, who said he looks for a great increase to come in that industry.

Please note correction on page 104 for table in Mr. Stadler's article on costs of motor installation.

WAYAGAMACK MAY EXTEND PAPER MILL.

Net earnings of Wayagamack Pulp & Paper Co., Ltd., established a new high record in the year ended November 30th last, the total after providing for war tax, but before deductions for depreciation, writing off etc., amounting to \$1,057,742, against \$966,349 the year before, and \$979,362 in 1916, the last, however, being before war tax provisions.

After the same allowance for depreciation of plant as in 1917, namely, \$160,000, payment of \$208,980 bond interest, and writing off \$134,726 for stumpage and \$10,000 for discount on bonds, the surplus balance was \$544,036. That represented earnings at the rate of 10.9 p.c. on the capital stock, against 10.3 p.c. the previous year, when writing off was about \$60,000 less.

The pulp mill is now completed, but it is possible it may be advantageous to make some future additions to the paper mill with the object of increasing the proportion of finished paper. With this and other possible improvements in view, it was considered expedient to set aside the sum of \$500,000 to the credit of general reserve.

C. R. Whitehead's report as president has this to say:

"Your directors found it necessary during the past year to spend a considerable sum in repairs and a general overhaul of your plant to put it in a thorough state of efficiency. This work has now been completed and a reduction in costs is already realized.

"In view of the cessation of hostilities, the shipping facilities should be greatly improved, thereby increasing the company's opportunities for developing its export trade."

PAPER-MAKING MACHINERY IN ENGLAND

According to the Paper-Maker and British Paper Trade Journal, the Engineering Trade Committee appointed by the Minister of Reconstruction, reporting upon the paper trade, says it was found that paper-making machinery was not imported from abroad to any large extent before the war, but certain auxiliary plants and special machines used in paper materials were imported from Germany. Such are:—

Plant for coating art papers, photographers' papers, gummed papers, waxed papers, etc.

Plant for making asbestos papers and boards.

Plant for making roofing felt.

Super calenders.

Special cutting, reeling and slitting machines.

Strainers of the "Wandel", "Voith" "Fullner", "Banning" and "Seybold", "Reiniecke and Jasper" types.

Filtering machines, for treating back water, "Fullner" type.

The Committee think that this industry could be developed in England. It is necessary to specialise more than has been done in the past. They recommend that engineers engaged in the industry should form an Association for the purpose of dealing with specialisation and other matters affecting the future development of the industry. Their investigations show that there are large markets for paper machinery in various parts of the Empire and that an export trade in this class of machinery could be developed by British manufacturers.

Wear goggles when working around circular saws, chipping, handling acid, cutting cables, working at emery wheels, etc.

THE MARKETS

CANADIAN MARKETS.

Toronto, January 27.—Reports show that all mills, owing to the better labor position and the excellent shipping arrangements, are producing more paper than they have been for some time. The newsprint mills turned out more tonnage during December than they did in October or November. The figures for twelve months show a total production of 1,754,077 tons, and shipments of 1,802,232, as against a production of 1,572,045 tons, and shipments of 1,591,133 in 1917. The interest in the trade this week is centred in the decision of the Appeal Tribunal at Ottawa, and in the proceedings of the annual meeting of the Canadian Pulp and Paper Association, when the effect of government regulation of newsprint papers will probably be discussed and also the question regarding how the industry can best serve the country during the period of readjustment. The relations between employers and employees will be among the other matters to which attention will be directed.

The big problem which the trade is facing now is export, and mills will see that every end is devoted to taking care of the immense foreign business which is looming up. For years Canada has been exporting about ninety per cent. of her newsprint, but very little of any other kind of paper has gone abroad, and it is felt that the day has come when the world markets should be taken full advantage of by Canadian pulp and paper producers.

There are many mills which could attend to more business at present as the Canadian demand is naturally limited, and in high grade bond and ledger papers, kraft, wrappings, coated and other lines, it is believed that a fine opening awaits the trade. The industry is beginning to waken up regarding the splendid possibilities that are presented, and now is the accepted time to place the paper and pulp business on the map. The lumbermen and wood working establishments are going right after export markets and sending representatives direct to the Old Country and the furniture and other allied industries are doing the same. There appears to be no reason why the paper and, more particularly the pulp end, should be neglected.

Canada is to-day turning out more sulphite pulp by 300 tons a day than she did last spring, and is in a position to supply much of this commodity to Great Britain, Australia and other countries. It is up to the

federal and other administrations to see that adequate ocean tonnage is provided. Everywhere export is being discussed, and it is expected that the pulp and paper manufacturers will not lag behind in the race. On the whole manufacturing conditions were never more favorable. There is plenty of coal, transportation on the railways is good and raw material is available, although still high in price, while labor is more efficient and available. After four trying years of frequently not knowing which way to turn there is now a comparatively clear sky and smooth sailing. The outlet is the foreign field, and the big enterprises in Canada will be heard from within the next few months, and great activity will prevail.

It is expected that prices on book paper will remain unchanged until April the first at any rate, although no definite announcement has been made to this effect. Orders are now coming in more plentifully and wholesalers and large consumers are beginning to realize that the expected decline in prices will not materialize as long as the cost of production remains so high. It is understood that Thomas Murphy, chief engineer of the Provincial Paper Mills Co., who resides at Port Arthur, is preparing plans and drawings for the proposed new book and writing mill which the company will erect at Port Arthur in conjunction with the plant now operating there, known as the Port Arthur Pulp and Paper Co. This will be a two machine mill, but whether any work will go ahead on the project this year remains to be decided upon later. One machine would be installed at first, and this would be 140 inches in width. The Provincial Paper Mills Co. intend going after the export trade in larger quantities and are already doing a nice business in South America, New Zealand and Australia.

It is understood that a deputation went to Ottawa during the past week urging upon the government the advisability of having the book paper investigation pushed to completion. There is a feeling in the trade, however, that although the probe may be resumed, there is no justification for the regulating of prices now that the war is over, and in any event, Controller Pringle will have ample evidence presented, as a result of the auditors' work, to show that no undue advantage has been taken of war conditions to boost prices unjustifiably or unreasonably. The book paper producers are not worrying any.

The price at which some publishers have been get-

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have any surplus
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bleached. We are
always in the mar-
ket.

ting their book paper has been raised by half a cent per pound, and the freight, as the mills claim the product has been supplied below cost, and there is no intention of continuing this practice. The buyers have been given the option of cancelling the contract at any time on thirty days' notice, so that they are under no obligation to the mills.

The mild weather of the past month has militated against pulp wood operations as, owing to lack of snow and frost, it has been impossible to get the wood to the railway tracks. The settlers have also been complaining, and it is hoped that February will see more ice and snow in order that the northern mills may get in much needed stocks of wood.

In the sulphite and ground wood pulp market matters are rather quiet and most of the mills are pretty well caught up with business. In some cases plants are piling pulp. Prices remain around \$90 for easy bleaching and \$120 for bleached. Orders are limited just at present.

NEW YORK MARKETS.

New York, Jan. 25. — Different opinions are expressed by local trade factors regarding the prevailing condition of the paper market. The majority describe the situation as decidedly quiet. These traders declare that consumers are doing little worth while buying and that demand, on the whole, is of narrower proportions than usually exists at this dull season of the year. On the other hand, there are some jobbers and mill agents who seem quite satisfied with the market. There is no one who goes so far as to say that demand is brisk, but some assert that they are accomplishing a fairly large volume of business and that, with everything considered, the market is in a moderately active position. As an example, one representative mill agent here who handles the product of a well known tissue paper plant yesterday showed inquiries from six different jobbing firms in various parts of the country for carloads of while and manila tissue, all of which came in the same mail. While it is to be expected that all these inquiries will not develop into actual orders, this instance is cited to show the interest of buyers at present.

Current buying, particularly of the higher-priced grades of paper, is of a very healthy character. Consumers are not stocking up, nor are jobbers, and this leads sellers to believe that when conditions have settled a bit more, business will expand to a material extent. There seems no reason to doubt that jobbers are going along with surprisingly light stocks. Even small orders frequently have to be filled from the mills, and it goes without saying that the average jobbing house is anxious for the market to become stabilized to the degree where he can feel secure in carrying larger supplies. It therefore appears probable that during the forthcoming several weeks, at least some will commence to buy ahead. It is rather generally conceded by dealers and consumers that prices on paper are likely to remain at prevailing levels for some time, and the fear to cover forward requirements that has been such a pronounced factor in the trade for the past year and longer seems to be gradually disappearing.

Prices on practically all descriptions of paper are holding their own. In some cases, values are more or less nominal; it being a difficult matter to ascertain just what actual market prices are, for example, on high quality bonds, linens and ledgers. Buying of

these papers is strictly on a hand to mouth scale, and there is hardly enough business current in some grades to establish definite market values. The cheaper descriptions of writings are moving with regularity and in fair volume. Book papers are in moderate demand and quotations are maintained. Indications are that some few mills are shading prices as an attraction to buyers, but this is more the exception than the rule, nearly all of the important manufacturers holding firm for full quoted figures. M. F. book is quoted at a range of 8.75 to 9.25 cents per pound, depending on the quality and tonnage involved, while super calendered book is held at from 9.00 cents upward.

Moderate activity characterizes the market for tissue papers. Sales of No. 1 white tissue have been noted at \$1.15 to \$1.20 f.o.b. mills, while No. 2 white and manila tissue have sold at \$1.05. The Government continues to absorb large quantities of roll tissue and this is proving a strong factor in the market. Coarse papers are in rather poor demand and prices display an easing tendency although no notable changes have been recorded during the present week. Kraft wrappings possibly could be bought at slight concessions, current quotations being at a basis of between 9.50 and 10.00¢ per pound for No. 1 domestic kraft.

The board market is quiet. Box makers and other consumers have not yet resumed buying in a substantial way, and mills are managing to get just about enough orders to keep them engaged. Prices are sustained by production costs and expectations of a brisk spring business, however, and chip board is quoted at \$50 to \$55 per ton, news at \$55 to \$60 and straw board at around \$55 a ton.

Groundwood.—The mechanical pulp situation is unchanged. Demand is moderate and quotations are maintained by grinders, who quote at a range of \$29 to \$31 per ton air dry basis for freshly ground pulp at the point of production. Emphasis continues to be placed by manufacturers on the probabilities of a wood famine later in the season, and this is proving to be a sustaining factor. At present the cost of pulpwood is unusually high, which would seem to bear out the contention that there is a shortage. Reports have been received of grinders in the Watertown district paying as high as \$25 per cord for wood, with talk heard of even higher prices in some sections.

Chemical Pulp.—Current demand for chemical pulp is comparatively slow. Importers and dealers in the domestic and Canadian product report merely a casual demand for spot lots of pulp, although it is said authoritatively that consumers are not the least backward in entering into engagements for forward supplies. Importers tell of placing quite a few contracts for pulp for shipment from Norway and Sweden, while the tendency among buyers of domestic pulp seems to be to cover requirements for a time ahead. Quotations show little or no alteration. Domestic producers of bleached sulphite quote in the neighborhood of 5.75 to 6.00 cents per pound, while unbleached sulphite of news grade is held at \$65 to \$75 per ton at the mill, domestic easy bleaching at 4.00 to 4.50¢ and Mitscherlich sulphite at 5.00 to 5.50¢. Foreign grades on spot are nominally quoted at 8.50 to 9.00¢ for bleached sulphite and 4.75 to 5.25¢ for No. 1 unbleached.

Rags.—The rag market shows an improved tone. Inquiry for some grades has been decidedly more active this week and mills have offered attractive prices for the material wanted. Demand has centered

WOOD PULP TRADING CO., Ltd.

30 East 42nd Street, New York City

largely on miscellaneous packing of thirds and blues, No. 2 whites, new fancy shirt cuttings and roofing stock. Felt manufacturers have been active buyers, and sales of No. 1 satinetts have been recorded in some directions at as much as \$50 per ton delivered, although the bulk of buying has been done at slightly lower levels. Miscellaneous thirds also have been absorbed by felt mills in good volume. One well-known felt plant is said to have a rush order for a large quantity of floor covering, and it is believed the bulk of rough thirds and blues bought has been for this purpose. Sales at close to 3.00c a pound f.o.b. New York have been noted, while figure is close to the prices now available for repacked thirds, namely, 3.25 to 3.50c New York. New fancy shirt cuttings have sold to mills at around 8.50c delivered, while No. 2 old white rags have commanded 3.75 to 4.00c a pound.

Old Papers.—Business of moderate proportions is passing in old paper stock. Low grades continue to lead in demand, but high qualities also are selling in sufficiently large volume to sustain values. Current quotations to mills on hand white shavings of No. 1 grade range from 5.40 to 5.60c f.o.b. New York, while No. 1 soft white shavings are available at around 4.50c New York. There has been quite a demand during the past several days for No. 2 hard white shavings and sales to manufacturers at beyond 5.00c a pound New York, have been reported. Books are mov-

ing in a routine manner at an average price of 1.50c New York, for heavy books and magazines. Kraft is slightly lower in price, with No. 1 packing now obtainable at as low as 3.40c f.o.b. Manilas are steady, while folded newspapers are selling to consumers at 85c New York, and No. 1 mixed paper at 60c.

Bagging and Rope.—A slightly better demand is reported for old manila rope and sales to mills at 5.00c a pound, New York, have been made this week. Business is still restricted, however, as consumers are confining their buying chiefly to quantities directly required. Strings are dull and nominally priced. Scrap bagging is quoted at 3.00c a pound f.o.b. New York, and is moving only in scattered directions and in limited volume.

MORE NEW COMPANIES CHARTERED.

Each week sees new companies securing charters and getting ready for the period of expansion in Canada. Among the latest to become incorporated are:

The Bonny River Lumber Company, Ltd., has been incorporated with head office at Bonny River, N.B., and capital stock of \$15,000, to carry on business as manufacturers of and dealers in timber, lumber, pulpwood and products of the forest. Among the incorporators are A. J. O'Connor, W. E. Golding and G. R. McKean, of St. John.

The Canada Pulp and Lumber Company have been granted letters patent to do business in the province of Quebec, with head office at Montreal, P.Q., and capital stock of \$750,000. The new company will acquire by purchase, lease or otherwise and own and operate sawmills, shingle mills and lath mills, paper mills, pulp mills and generally carry on the business of lumber merchants and manufacturers in all branches thereof. Among those interested are J. R. Melancon, L. D. Clement and E. Ostigny, of Montreal.

The Resida Mining & Exploration Company, Ltd., have been incorporated with head office at Montreal, P.Q., and capital stock of \$20,000, to carry on the business among other things of lumbermen in all branches and to manufacture, buy, sell and deal in timber, lumber, woods, pulp and paper, and to acquire by any title sawmills and other mills, factories, etc. Among those interested are A. R. McMaster, K.C., of Westmount, and A. Augers, advocate, Outremont.

Boek & Tetreau, Ltd., have been incorporated with head office at Montreal, P.Q., and capital stock of \$40,000, to carry on business as manufacturers of wood, pulp and paper; to construct and operate sawmills and to carry on business as lumber merchants.

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WOOD PULP
of every description

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Incorporated

18 E. 41st Street

New York, N.Y.

Established 1886

etc. Among the incorporators are H. J. Tetreau, H. Bock and B. Benoit, of Montreal.

WELDING SUBMARINES AND DIGESTERS.

The St. Lawrence Welding Company, Limited, was established in the year 1904; at that time the Directorate was largely made up of the officials of the American Locomotive Works, Schenectady, N. Y. Their efficient engineer, Mr. E. C. Richardson, was appointed Managing Director and their welding foreman, Mr. George Ward, was appointed Superintendent.

During the war Mr. Richardson took out a commission in the American Expeditionary Forces and Mr. George Ward enlisted in the 42nd. Battalion Royal Highlanders and lost his life in France on the battlefield. The Government took over the services of the whole of this organization at different periods and used them on the repairs to several different men-of-war, submarines and transports.

In 1917 Mr. A. M. Barry, now Vice-President and General Manager, was appointed Managing-Director with a new Board of Directors and new Canadian control. To-day the Company is an exclusively Canadian organization with the whole of the stock issued owned by Canadians, and the directors and officials of this company are all Canadian business men and engineers. At the present time the head office is at 138-140 Inspektor St., Montreal, with the works adjoining, and branch works in St. Catharines, Ont., and Halifax, N.S.

The Halifax branch is devoting its time exclusively to transport work, but the head office for the past three years has been devoting a lot of its time and attention to repairs of pulp and paper troubles on digesters, tanks and machinery, and have completed the

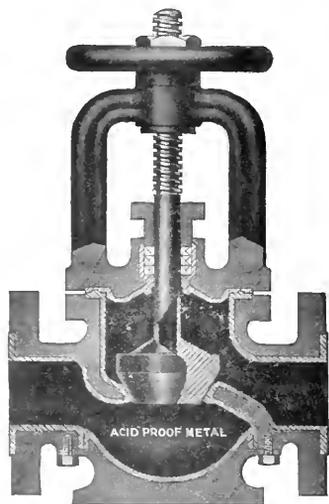
repairs on several digesters in different parts of the country. They make a speciality of Oxy-Acetylene, Electric and Thermit Welding also Lead Burning, and can also manufacture any kind of welded tanks for air receivers, brine or liquor tanks.

Saul Gottesman, Secretary of M. Gottesman & Company, Inc., 18 East 41st Street, New York, wood pulp merchants, has just returned from military duty, having received his honorable discharge from the United States Army. He expects to immediately resume his duties. At a reception tendered to him upon his return, Mr. Gottesman stated, among other things: "My experience in the Army impresses me with the great work that can be accomplished by unity of strength and organization for a purpose. If the pulp and paper trade were as strongly organized as it is possible for them to be, working in close harmony and with a united purpose, the good that would be obtained by the paper industry would be of the greatest benefit to them." We agree.

A paper track has been in use in Paris for several years for bicycle racing. It is more durable than a wooden track, is more easily laid, and gives better speed. But the latest suggestion in the uses of paper is contained in the title of a newspaper short story—"The Paper Wife."

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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EDITORIAL

A NATIONAL EDUCATIONAL SYSTEM.

"The need of a national educational system that would lift our present provincial and often times parochial system out of their slough of mediocrity and make really effective the training of future generations of Canadians," was the substance of an address recently delivered by Professor W. F. Osborne, of Winnipeg, before the Canadian Club of Montreal. The official title of the address was, "A National Objective for Canadian Citizenship." As a matter of fact however, the title hardly does justice to the progressive scheme outlined by Professor Osborne.

He admitted that the project was first broached by President W. J. Bulman, now head of the Canadian Manufacturers' Association. The need of a national educational system was brought home to the citizens of Winnipeg by the presence in that great melting pot of the west, of a score or more of nationalities. Mr. Bulman outlined his project to a few educationalists and others interested in the progress of the Dominion with the result that a large committee was formed and are now outlining the scheme to various bodies throughout the Dominion in the hope of securing a representative attendance at a convention to be held in Winnipeg next summer.

According to Professor Osborne "Education is the primary industry of the country," but it is treated by the people of the Dominion as if it were of secondary importance. He illustrated what can be done by a carefully controlled system of education on a national basis, by pointing out what Germany set out to accomplish generations ago. She educated her people to believe in kultur and militarism as the supreme objects in life, on the other hand Japan started a generation ago to educate her people along constructive lines with a result that she is to-day one of the first nations of the world. The one educated her people to do evil, the other nation to do good.

In the course of his address Professor Osborne pointed out that our present system of provincial control led to provincialism of the worst kind and the cultivation of anything but a solid national mentality or even a common vocabulary. He did not advocate that the control of education be taken out of the hands of the provinces, but that the "various systems should be flushed by a great cleansing and invigorating stream of idealism directed by the biggest men in the country."

He argued that reconstruction meant more than the

fitting of men for their old jobs. Reconstruction in the largest sense was spiritual not material. Education not only for the men of to-day but education of the future generation would mean more than the most optimistic could imagine. "Housing schemes, the getting of men back into their old jobs, putting wooden legs on maimed men and glass eyes into the sightless was good enough as far as these things went, but what was required was a real national educational scheme." This is needed more than ever, as thousands of our best men had been killed. In his concluding remarks the speaker pointed out that practically all of our teachers were women" (not women but mere slips of girls), who have no knowledge of the great fundamentals they are supposed to teach." "Men cannot afford to be teachers, laborers get five times as much as we pay our teachers and yet the education of our youth is our most important industry, the great basic industry of the nation."

The recommendations made by Professor Osborne were that manufacturers, business men generally and all those interested in the future welfare of the nation should do everything possible to further the interests of a national educational scheme and that practical steps should be taken to see that a representative gathering is held in Winnipeg this coming summer. It was one of the most powerful addresses and one of the ablest pleas for education ever delivered in Montreal and no person who heard it can be deaf to its appeal.

THE VALUE OF A MAN.

Considerable stir was caused a short time ago by an article in the Montreal Star by Professor Stephen Leacock. The Professor in a humorous fashion, but in a manner that would appeal to the popular mind, laid considerable stress on the advantage of booze, particularly to the laboring man. In the course of his argument it was inferred that there were just so many drinking men who would probably die from the effects of alcohol anyway so that their case need not be seriously considered. There was also a good deal said about the rights of the individual in selecting his liquid refreshment to his own taste, mentioning the club man with his whiskey and soda as well as the ditch-digger with his glass of ale.

A number of letters were subsequently published by The Star in support of both sides of the argument. A number figuratively called for three cheers for the

Professor and complimented his boldness in standing out against the tendency of the age toward prohibition of alcoholic liquors. There were also a number of letters that called attention to some other aspects of the situation that seemed to have been overlooked by the champion of the bottle. It hardly seems possible that a man of Professor Leacock's intelligence and particularly one who has so clearly expounded the principles of economics should consider the individual man of so little importance that he does not see the need of protecting even a single individual from the effects of drink.

The futility of any argument for alcohol as a beverage was impressed upon us by the statement that during the week following the convention of the National Safety Council in St. Louis the only accidental death in that city was that of a drunken man who fell from the seat of his truck and was killed by the fall. We do not know what the man was earning or how much he was capable of earning as an apostle of the bottle. We are absolutely sure that he would have been a more reliable man and consequently capable of a higher wage had he not been addicted to drink. The fact remains that his death was caused by his inebriate habits and that there is one less worker in Missouri. It would be impossible to tell what this man was worth in dollars and cents, as a husband and father, or how much more he would have been worth in this regard had he been a total abstainer. It might laboriously be calculated how much he could contribute in the way of production and to this might be added the capitalization value of his wages, but this would be only a monetary figure and would not properly measure his value as a man. The point that stands out clearly in our mind is that the use of liquor is entirely contrary to the best interests of the individual, the state, and industry. We can see no more comparison between the satisfaction of having one's own way in this regard for selfish pleasure and the value of the alcohol-free man to the country than we can in the argument that theft and murder are proper activities for the individual who prefers such amusements in preference to a law by which the majority of the people choose to put a damper on these divisions.

ILLITERACY.

An editorial clipping from some Canadian newspaper has been handed us. The composition leads us to think it is from the Quebec "Telegraph." At any rate it calls attention to a very important point in connection with the problem of immigration—a problem that will exist as long as we have vast areas of arable land awaiting cultivation and expanding industries in our towns and cities. Canada's immigration problem is largely one of education and is made more difficult by the tendency of the foreigners to coagulate and maintain their old customs and language, which in fact they must do unless they be shown a more excel-

lent way. The spread of democracy in Europe may make those lands more attractive to the native, but if he comes here, he and his children must be properly educated. Some interesting information is given by our contemporary:

The drafting of the American Army has drawn public attention to the incredibly high percentage of illiteracy existing in the United States, an illiteracy unevenly distributed among the different states, but disappointingly large on the average, reaching to 7.7 per cent. This illiteracy was conspicuous in the army and navy, which the government undertook to recruit rapidly by draft, and was at once seen to present serious obstacles to the rapid training of effective government forces.

Although the existing illiteracy and its consequences were thus brought to the attention of the American people by the war, the whole people at once saw that the public interest in the prevention of illiteracy was not at all confined to war times. The result is that an earnest heart searching is in progress in the United States to discover where the cause of the failure lies. Franklin K. Lane, Secretary of the Interior, sets his finger on one of the salient points when he asks what should be said of a democracy which expends in a year twice as much for chewing gum as for school-books, more for automobiles than for all primary and secondary education, and in which the average teacher's salary is less than that of the average day laborer.

But smashing as is this arraignment of America's educational ideals, it is not, perhaps, so much the quality of the education which is at fault in this case, as its failure to penetrate to a certain class. A large proportion of the illiteracy of America is found in the American born children of foreign parents. Education is not touching the immigrant, or, what is worse, it is not touching his American children.

This is a matter where Canada can benefit from her neighbor. The new Department of Immigration and Colonization should work in close co-operation with the provincial educational departments to ensure that our educational system fulfils its mission among the foreigners who come to our country. The children of our immigrants must not grow up to be Canadian illiterates.

LAURENTIDE'S CLOCK.

We read recently in "Le Digesteur" that everybody at the Laurentide mill will hereafter "punch the clock" on beginning and leaving work. The company recognizes the fact that great apparent irregularity cannot be avoided in many cases. There is a subtle bit of applied psychology in this idea, however, which will act as an unobtrusive stimulus to uniformly good efforts. Laurentide is noted for getting up before breakfast and doubtless the alarm clock has had much to do with putting their stock on the sound and profitable basis where it is to-day.

"MAKING WORK ATTRACTIVE" INTERRUPTED.

On account of the quantity of material relating to the annual meeting of the Canadian Pulp and Paper Association, the last installment of Mr. Wolf's article had to be postponed till next week. Don't miss it.

Momentous Year for the G. P. & P. A.

By F. J. CAMPBELL, Retiring President.

You will admit I am sure the past year has been one of the most important in the history of the world, and I think we can also claim that it has been one of the most important in the history of our Association. Thanks to the ungrudging and able work of not only the officers, but of a great many of our members, I think I may say without the slightest egotism, that it has also been one of our most successful ones.

Newsprint Section.

Beginning with the Newsprint Section, not only the Chairman, Mr. Geo. McKee, but every member in it has devoted a large amount of time and attention to the problems which it had to face.

At this time last year, like the Allies, we had our backs against the wall and were confronted by the most unjust price regulation ever perpetrated in this country.

After constant and persistent effort by all concerned, aided by the able work of our counsel, some measure of relief was obtained and all concerned are still working to gain something more adequate.

Chemical Pulp Section.

The Chemical Section had some cause for anxiety early in the year, owing to complications in the sulphur situation, caused by the war. The well-founded arguments of the members finally convinced the Government, who decided not to interfere with present arrangements.

During the year Mr. Riordon tendered his resignation as chairman of this Section, but was prevailed on to serve out his term on the understanding that he would then be relieved. Mr. Riordon has served this Association in almost every office and thanks are due to him for the large amount of interest he has taken in our work.

Mechanical, Board, Wrapping, Coated, Felt.

Improved organization and the establishment of trade customs has been brought about in the Board, Mechanical, Pulp, Wrapping and Coated Paper Sections, of which you will hear in due course from Captain Aeber, Mr. Taylor, Mr. Wilson and Mr. Pauline, while the organization of the Felt Section in charge of Mr. Graves is so good as to be a model.

Book and Writing.

A great deal of work has been done in the Book and Writing Section, not only by Mr. Waldie and Mr. Rolland, but by every individual member. An excellent code of trade customs has been fully established. Early in the year an investigation into prices of book paper was begun, but has since been dropped. Possibly unjust restriction can only be maintained by the unfair use of journalistic influence.

The Technical Section.

In the Technical Section, Dr. Bates, Mr. Thorne, Mr. Sabbaton and others have done much active work.

An effort has been made to effect an arrangement by which the industry would become actively associated with the Forest Products Laboratory. It seems regrettable that some good working basis cannot be established.

The Sub-Committee on Technical Education made considerable progress for which thanks are due to Mr. Crossley and Mr. Carruthers.

Woodlands Section.

Last but not least, our newest Section, that of Woodlands, has rapidly become an unqualified success under the guidance of Mr. Power and Mr. McLean. Their September meeting was one of the best attended, and the most enthusiastic meetings held under the auspices of this Association. Much practical work was discussed, and only a mill man can understand the joy with which this meeting listened to Mr. Dalton when he told how he had put one over on the manufacturing end.

The War Trade Board.

Threatened embargoes and other restrictions have been dealt with from time to time during the year, and the thanks of the Association are due to the courteous and remarkably able assistance accorded them by the War Trade Board.

The Car Supply.

Early in the year, the question of car supply became serious. Our needs were given the best possible consideration by the Canadian Railway War Board, and a reasonable degree of relief established.

Coal.

The matter of getting a full supply of coal also entailed some anxiety, but the industry was given a preference that fully met the situation.

Organization.

I wish to express my appreciation of the able and enthusiastic work of Mr. Dawe and Mr. Beek. Mr. Dawe has administered the office of the Association in an efficient and business-like manner. Thanks largely to his efforts, we have at last been accorded an intelligent classification of paper imports, and the many returns called for by various departments of the Government have also been consolidated. Mr. Dawe has been active in getting out the various bulletins with which you are familiar, and while carrying on his duties he has, at all times, given courteous and prompt attention to the many calls upon him by our members and others.

The work of Mr. Beek as our publicity representative has been most valuable. Mr. Beek began by getting what publicity he could for us, and succeeding in getting more than we expected; at the same time he started in to lay a solid foundation for his work by acquiring figures and other data bearing on the problems before us. On his own initiative, and by really brilliant work he laid before us a mass of material of value to the Association, a great deal of which proved to be of the utmost importance to our counsel.

While Mr. Beek is employed by the Newsprint Section, there is a suggestion before you to enlarge the scope of his work.

The Outlook.

There are many problems before us that call for attention and effort.

Re-establishment.

The first of these is the question of taking care of our own men who have been at the front and of giving our assistance to the whole problem of re-establishment, which calls for the serious consideration of this Association and of every member in it.

It is apparent that, for well-understood reasons, re-

turned soldiers cannot immediately fall into the regular routine of civilian life, but it is being demonstrated daily that by the exercise of patience and effort on the part of the employers and foremen, the majority of these men will soon fit into their former occupations and become more valuable than before.

Publicity.

The matter of more publicity for our industry is open for consideration. The Newsprint Section engaged Mr. Beck to look after their publicity interests about a year ago, and some other work has also been done, apparently with good results.

A general campaign with a view of maintaining optimism and encouraging the use of Made-in-Canada paper, has been proposed and seems to merit approval.

Freight Rates.

The question of railway and ocean freight rates is of vital importance to this industry and demands serious and immediate attention.

Ocean freight rates, although showing some reduction, are still 700 per cent higher than pre-war figures.

Our railways are still operating under conditions hastily instituted as a war measure, which seriously affect operating costs.

It is obvious that as we are competing with the world in pulp and paper, it is of vital importance that inland and ocean transportation be obtainable by us at rates proportionate to those obtained by other countries.

Conservation.

The general public are of the opinion that Canada has unlimited timber resources. Those of us connected with the industry know that when due allowance is made for what is inaccessible and what has and is burned and cut, the question of a continuous supply will be a very serious one within a comparatively short time.

The amount of wood used in the industry, including that exported to the United States, is estimated to have increased by 475 per cent during the last 15 years and now amounts, approximately, to 3,000,000 cords a year. It is, perhaps, too much to expect that the next 15 years will see a proportionate development in the industry, but allowing for an increase merely on the basis of 10 per cent per annum, our consumption of pulpwood at the end of the next 15 year period will be at the rate of 7,500,000 cords a year, which is greater by more than 2,000,000 cords than the present annual consumption of pulpwood by the United States. Since it is being demonstrated that our cut-over forests are not reproducing the species of wood we require, the necessity and importance of proper attention to conservation cannot be over-estimated.

The relations between employers and employees in this industry have been kept on a high plane—if these relations are to be maintained the questions involved must be handled with care; we are prepared to give labor all that conditions permit, but if the governmental restrictions against which we are fighting, continue to hamper us, anyone can see that it will be difficult, if not impossible to extend, that consideration to labor that is so desirable at the present time.

In conclusion, I thank you for the support accorded the Association's various officers and bespeak the same cordial assistance for my successor. Now that our industry has assumed such a vast importance, and is becoming recognized for what it is, I trust that the Association will continue to receive the en-

dorsement and support from its members that is now being accorded, thereby insuring the continuance of its service in building up the industry and increasing the value of its work from year to year.

It isn't often that a man writes his own obituary, but when Ted Campbell dies—God grant him many more years—no finer epitaph can be written than the record of his service to the industry and country during the momentous year of his leadership of the Canadian Pulp and Paper Association.—Editor

CANADA'S BIGGEST MILL TO BE AT THREE RIVERS.

The possibility of a new pulp and paper mill in the vicinity of Three Rivers has been in the air for several years. The International Paper Co. has large interests in Canada and it has been felt for some time that there would soon be "something doing." Indications were that the first step would be a groundwood mill, perhaps at Batiscau. Latest reports, however, promise a much larger development, in fact the largest paper mill in Canada. Plans are going forward through the St. Maurice Lumber Co. of Three Rivers, of which the president is Geo. F. Underwood, New York, and the manager is R. F. Grant, Three Rivers.

The proposed mill will be located on the company's property at Three Rivers, P.Q., at the outlet of the St. Maurice River. It has not been fully decided whether the company will construct only a sulphite mill, or also a paper mill. The sulphite mill will involve an expenditure of about \$500,000, but a paper mill such as is planned, containing ten units, would cost about \$6,000,000, it is said.

The company has been working upon the plan since 1913. The scheme involves the development of Les Forges Rapids on the St. Maurice River, nine miles north of Three Rivers. A monolithic concrete dam, 30 ft. high, and 1,900 ft. long will be built. The foundations will be carried 60 ft. below low-water level. The power station will be equipped with seven water turbines, each 9,500 h.p. It is stated that the power development portion of the scheme will cost about \$7,000,000.

The company was incorporated in 1916 under the laws of Quebec province, with an authorized capital of \$600,000. It is a subsidiary of the International Paper Co., 30 Broad Street, New York. The parent company will finance the work.

The president of the International Paper Co. is P. T. Dodge, New York. A. H. White, 30 Broad Street, New York, is chief engineer, and H. S. Ferguson, 200 Fifth Ave., New York, is consulting engineer.

The chief executives of the companies were in Three Rivers last week. While they made no public statement, it is practically assured that work will be started on the dam by next spring. Mr. Cobb, assistant engineer on Mr. Ferguson's staff, spent all last summer on the preliminary investigations for the dam. The services of B. Bourgeois, civil engineer, Three Rivers, were retained at the same time to locate a spur from the C.P.R. to the dam site, a distance of about two miles.

The Canadian Fairbanks-Morse Co., Montreal, are distributing a collection of valuable information on C. F. M. steam plant equipment. This is very conveniently prepared in the form and size of a letter file and will fill the standard cabinet.

Much Accomplished at C. P. & P. A. Meeting

Two hundred delegates attended the sixth annual meeting of the Canadian Pulp and Paper Association, which was held last Friday at the Ritz-Carlton Hotel. The delegates were from all parts of New Brunswick, Quebec and Ontario, and included visiting pulp men from the United States.

Mr. F. J. Campbell presided at the morning sessions, and gave his annual address, covering the activities of the association during the year. Following this reports were presented by the chairmen of the different sections. This was followed by the election of officers, when Mr. J. A. Bothwell, of the Brompton Paper & Pulp Co., was elected president, and Mr. George Chahoon, jr., vice-president, with Mr. A. L. Dawe as secretary. All the other officers and directors were re-elected by acclamation.

The main business brought before the general meeting was the endorsement of a scheme presented by the educational committee for the installation of a system of vocational training for employees of the pulp and paper mills.



A. L. DAWE.

Secretary of the Canadian Pulp and Paper Association and largely responsible for the great success of the meeting.

This was reported by the Technical Section, as a result of the previous day's work, and the plan met with such approval that it was decided to vote a total of \$10,000 for this vocational training work. This amount was to be spread over several years. During the coming year it was decided to expend \$5,000 for the technical training of employees by means of text books and specially prepared pamphlets, along the lines of the correspondence schools.

A proposition to form a Safety and Welfare Section was brought up for discussion and left for the executive to look into. Such a Section would co-ordinate the safety work done in all the mills and make co-operation more easy and effective.

Announcement was made that the Canadian Trade Commission in London suggested that the Associa-

tion send a representative of the Pulp and Paper Industry to England.

Buy Home Products.

Another important matter taken up was the proposition for the utilization of an extensive educational advertising campaign in favor of the greater use of Canadian-made pulp and paper products, and to induce Canadian business men to reduce their purchase of imports. This was referred to the incoming executive, with a recommendation that they see to it that a strong publicity campaign be inaugurated along these lines.

At the meeting of the newsprint section, a resolution was adopted in favor of memorializing the Dominion Government to remove all government control of the paper industry from and after the 1st of March, since the war conditions which had justified such control were now over. This resolution was unanimously adopted, and at a convenient time a memorial to this



F. J. CAMPBELL.

Manager Canada Paper Co., Retiring President of the Canadian Pulp and Paper Association.

effect will be presented to the Government by a strong delegation of the pulp and paper manufacturers.

Following the morning sessions, the members adjourned to a luncheon in the dining-room at the Ritz-Carlton. This was presided over by the new president, J. A. Bothwell. Others at the head table were George Chahoon, jr., F. J. Campbell, Henry A. Wise, Sir William Price, George H. Montgomery, K.C., Capt. Dudley Field Malone, U.S. Navy, and S. J. B. Rolland.

The speaker at the luncheon was Mr. Henry A. Wise, counsel for the newsprint manufacturers of the United States and Canada, who made a brief and humorous address, leaving more serious matters to a future occasion.

After the luncheon a number of sectional meetings were held, at which a great deal of private business

in connection with the work of the association was discussed.

Much Accomplished.

At 7.30 p.m., clad in various degrees of glory, the party gathered in the Ball Room for the annual banquet, which all agree was the best yet. Mr. J. A. Bothwell, the new president, took the chair, and with him at the head table were Messrs. George Carruthers, John F. Ellis, F. J. Campbell, H. A. Wise, Capt. Dudley Malone, U.S.N., Sir John Willison, George W. Sisson, jr., J. B. White, Sir William Price, George Chahoon, jr., George H. Montgomery, K.C., and Carl Riordon.

After proposing the toast of the King, the president gave his inaugural address, in which he dealt with general conditions, especially the change that had come about since their last meeting. Now industry had to face a new era, with a new relationship of government to business and of business to government, and particularly a new era of the relations of labor to capital and capital to labor.

The pulp and paper industry to-day, he said, was as a year ago, working to its total capacity, the production for the present fiscal year being \$120,000,000 with exports of \$100,000,000, an increase of 25 per cent



T. J. KEENAN,

Editor of "Paper," Secretary Technical Association of the Pulp and Paper Industry

over the previous year. Also the industry had given its proper proportion of volunteers, over 3,000 having gone overseas before compulsory service came into effect, and many more since.

Mr. F. J. Campbell proposed "Our Soldiers," which was responded to by Brig-General J. B. White, D.S.O., who was given an enthusiastic reception. The Canadian Corps, he said, had never been called upon for anything they did not carry out, and he paid a stirring tribute to General Currie as the man back of the efficiency of the Canadian troops.

"One other thing," said General White. "I hope we shall not forget this war. We must remember what Germany has done, and if after peace is proclaimed Germany tries to get into our commerce I hope our business men will be big enough to refuse to buy from them, even though they might make a little extra profit."

Before calling on General White, Mr. Campbell said there would be a chance to help the work of the Khaki League this year, instead of the Tobacco Fund, since so many of the boys were coming home.

There were 14 contributions of \$250, and when the collectors checked up their returns, the total was \$4,247. The result of the collection was received with cheers. Mrs. J. Dinham Molson, of the Khaki Club, was in the gallery, and there were loud calls for a speech from her. "Mother" Molson responded by expressing her thanks for the generous collection and assuring the gathering that every dollar of it would be used in looking after the welfare of returned soldiers.

Sir John Willison, who responded to the toast "Our Country," said that Canada, at present, faced a new and untried set of conditions. He expressed the hope that Canadians would carry into the work of reconstruction the same energy and courage that they had displayed in the prosecution of the war.

"Our Guests" was proposed by Mr. George Carruthers, and responded to by George W. Sisson, jr., and Capt. Malone, U.S.N., the latter being given an especially warm reception as a representative of the American navy.

An excellent musical programme was given during the evening.

Pipe-Major Gray and his accomplished pipers appeared twice and received enthusiastic applause.

Manager Quiek, of the Ritz-Carlton, was right on the job and his efficient service added much to the general satisfaction.

WHAT THE TECHNICAL SECTION DID.

There was a large attendance at the annual meeting of the Technical Section of the Canadian Pulp & Paper Association at the Ritz-Carlton yesterday, when the following officers were elected: Chairman, John Stadler; vice-chairman, F. A. Sabbaton; council, L. H. Shipman, George Carruthers, and J. B. Beveridge. The secretary, A. L. Dawe was re-elected.

In his retiring address the chairman, Mr. John S. Bates said that the year had been one of progress, marked mainly by the quiet work of the various committees. Although retiring as chairman he stated that he intended to keep up his work with the association, and urged that the other members keep up their interest in the technical side of the body.

The joint executive committee on vocational education in the pulp and paper industry reported that after a careful survey of the situation they had concluded that there was urgent need for a simple course of instruction for employees so arranged that each man might take it up during his spare time, so as to learn the "how and why" of operations, which would result in the betterment of the quality of product.

The report of the committee outlined a complete agenda for instruction to employees, which embraced the scientific knowledge particularly useful to such men, including arithmetic and mensuration, chemistry, mechanics and hydraulics, heat and ventilation, electricity, safety, sanitation and health. The agenda proceeds to include a large number of subjects particularly bearing on the making of pulp and paper.

It was proposed to make arrangements for the proceeding with this educational process as soon as possible, and the report of the committee was unanimously adopted. The parent association voted a liberal sum in support of the program.

The following papers were read and discussed: "Indirect Cooking of Sulphite Pulp and Forced Circulation," by Dr. A. E. Nielson; "Waste Sulphite Liquors as a Source of Alcohol," by V. K. Kriebel; "The Application of Power in the Newsprint Industry," by John Stadler; "The Distribution of Power," by E. B. Wardle; and "The Manufacture of Waste Papers," by Bowness. The first three were printed in this magazine last week. The others will be published in the near future. There was also a short talk on "The Conservation of Life," by Dr. Fiske, of the Life Extension Institute, New York.

A number of other reports and addresses were given during the afternoon, and at night a smoking concert was held in the grill room, at which a number of songs were given by "Jimmie" Rice and other entertainers. On Friday morning the Section visited the Montreal Technical School, where they were cordially received by Principal Macheras and Messrs. Gravel and Fortier, of the Trustees. The President of the Board

was present earlier, but as the party was delayed, he was unable to await their arrival and extend the official welcome. The inspection of the wonderful building and its excellent equipment was most interesting. Before leaving, the party gathered in one of the lecture halls, where Mr. Fortier expressed the pleasure of the school in having a visit from the Technical Section. Dr. Bates, retiring chairman of the Section, replied for the visitors and conveyed their appreciation of the courtesy shown them. Mr. McLeish explained the plan of work and policy of the school and Mr. J. N. Stephenson spoke on the part the technical man has in the period of readjustment.

The Technical Section was honored by the presence of T. J. Keenan and R. S. Kellog, of New York, as representatives of the Technical Association of the Pulp and Paper Industry.

A full report of the Technical Section meeting will appear in an early issue of the Pulp and Paper Magazine.

Bright Bits From The Banquet

A New Era Dawning for Canada.

By J. A. BOWHILL,
President of the Canadian Pulp and Paper Association.

A year ago, when we met together, we were confronted with a situation entirely different from that which, happily, confronts us to-day. At that time our country was still at war. While nobody, and least of all the members of this Association, had any doubt as to the ultimate and successful issue of the war, none could say how long a time might elapse before the ends we were fighting for would be achieved, nor could they say as to what additional sacrifices we might meanwhile be called upon to endure. Fortunately, that is now all past history. It is true that peace is still in the making, but the collapse of the enemy was so complete and so overwhelming that his resumption of hostilities is not only improbable but also impossible. His ability to make war has been permanently, and let us hope, everlastingly smashed. In the language of the street, he has been licked to a standstill.

We are here to-day at the threshold of a new era—a new era in the relationship of nation to nation, of people to people; a new era in the relationship of our industries one to another; a new era in the relationship of government to business, and of business to government; and, particularly, a new era in the relationship of capital to labor and of labor to capital.

In regard to the broad questions affecting international relationship and to those issues whose outcome will affect the welfare of the peoples at large, we can safely leave them in the hands of the statesmen now assembled across the seas and engaged in their solution. With the mightiest and the most intelligent nations of the earth in one accord as to the desirability of the abolition of war and the establishment of a permanent peace, and fully in agreement upon the principle of arbitration of disputes between nations as

of disputes between individuals, we may assume that the outcome of the deliberations now in progress will be one to assure not alone present peace but also that lasting tranquility and recognition of the sovereign rights of humanity that will speed world progress in all things material and intellectual, and spiritual advancement for the people everywhere.

Leaving those great issues, then, in the hands of those best fitted to work out their solution, we may be pardoned perhaps if we take advantage of this gathering to devote some small consideration to the new dawning era as it affects, or may affect, the particular industry which we represent, and in whose welfare we are so vitally concerned.

A year ago, when we met together, our position as manufacturers of pulp and paper products was not as favorable as it is to-day. It is true that our industry then, as now, was producing to its utmost capacity; that it was giving highly remunerative employment to thousands of workers; that it was contributing largely to the financial necessities of the Government in carrying on a war making unparalleled demands upon our country's resources; that it was supplying commodities vitally needed at home, as well as carrying on an export commerce greatly to the advantage and enhancement of Canada's credit abroad. I will not weary you with figures—which are well-known to most of you—except to say that our total production for the current fiscal year now drawing to a close will reach a value of not less than \$120,000,000 and that our total exports for the period will amount in value to about \$100,000,000, an increase of more than 25 per cent over the preceding year. Last, but not least, we had contributed our just proportion, and more than our proportion, of the stalwart sons of the Dominion who had donned the khaki and crossed the seas to fight their country's battles. The number of men so contributed by this industry, even before the enforced military service act came into operation,

*Addresses delivered at the annual banquet of the Canadian Pulp and Paper Association, Ritz-Carlton Hotel, Montreal, January 31, 1919.

is computed to have exceeded three thousand, with a great many more added since.

Still Persecuted.

But notwithstanding all this—notwithstanding our contributions to the national welfare in every form and to the full extent of our abilities, our cheerful compliance with every obligation laid upon us, no matter how onerous its character—we found that we were still being made the victims of a political persecution, such as no other industry in Canada was submitted to. We were being harassed and persecuted not alone in our own country—where, indeed, we had every right to look for a complete measure of protection and support—but also in the country to the south of us where, with some of our fellow-manufacturers in that country, we were being treated with the same lack of consideration. It is unnecessary for me to review the proceedings which we were compelled to defend before the Federal Trade Commission, or to refer to the most unfair and most unsatisfactory outcome of those proceedings insofar as the Commission was concerned. But it is worth while recalling that once we were permitted to take our case before a judicial tribunal—a tribunal uninfluenced by political considerations and unamenable to newspaper pressure—we began to receive treatment more commensurate with our rights as business men, as manufacturers and as citizens. At last we felt that we were getting a square deal. And, let me say right here, that we have never been afraid, that we have never been reluctant to have our rights passed upon by the courts, either those of Canada or those of any other country. We have objected and we do most strenuously object to being used as a political football, either here or elsewhere. We do object to this industry being singled out from all others for the liquidation of political obligations incurred by the politicians in office for the benefit of publishers of newspapers who may or may not have helped to put them there. We see no reason why we should not be permitted to run our own business, divorced altogether from politics and politicians, subject only to the same laws and regulations that apply to similar businesses. We want to be treated just as other industries are treated; nothing more and nothing less.

This brings me back to our own country. A year ago we were still confronted in Canada with a situation which, if it were not speedily righted, threatened to put some of us out of business. The Government has undertaken to require us and to compel us to sell our products at a price not only below the market price but in some cases below the cost of production—at a price that left little or no margin upon which we could do business. Special orders-in-council had been passed directed solely at this industry, containing enactments that could not have stood before a Parliament of disinterested representatives. We were threatened with heavy fines and with the confiscation of our properties if we failed to obey. We fought for the privilege of taking our case, as had been permitted in the States before a judicial tribunal and in this, after long delays and overcoming many obstacles, we at last succeeded.

That we have lost in a financial way on account of these vexatious and unnecessary proceedings, large as the amount is—I have been shown a compilation which indicates that for the period from March 1st, 1917, to July 1st, 1918, alone, we were compelled by Government fiat to sell paper in Canada at a loss of nearly \$900,000, as compared with the arbitrary price pre-

vailing under Government regulation in the States, and of nearly a million and a half dollars as compared with the prices prevailing in the open market—it is small and unimportant as compared with the general set-back sustained by the industry and the partial demoralization of our export market in consequence of this unfair treatment. I will not refer to the enormous expense and the untold annoyances we have been put to in order to defend our right to do business. These are also well known to all of you. But before I leave this subject I want to revert for a moment to what must appear to all fair-minded Canadians as the most iniquitous feature of the whole proceedings. This, to my mind, rests in the fact that our Government is allowing itself and its machinery to be used for the purpose of hammering down the selling price of the products of one of its leading industries in its principal export market. While members of the Government are going up and down the country making speeches urging greater production, a wider utilization of our raw materials and increased exports, as necessary to the country's salvation, in Ottawa they are doing their best to hamstring the one industry which is in a position to "bring home the bacon." We all know that there has been and is the closest sort of co-operation, defensive and offensive, between the newspaper publishers of the States and those of Canada, and that this united influence has been exerted against the manufacturers upon the Governments of both countries. The bulletins issued by the associations of publishers of the two countries give conclusive evidence that this is so. I will take the time to quote just two brief extracts out of more than a score from the American Newspaper Publishers' Association bulletins in support of what I say. In a bulletin number 3827, issued January 26, 1918, the American newspaper publishers say:

"It is well known that the Federal Trade Commission and Controller Pringle in Canada are working very closely together and the prices to be fixed will be affected by this close co-operation and exchange of information."

And again:

"Our position has been reinforced by the action in Canada this week, noted elsewhere in this bulletin, the Paper Controller fixing the price until the end of April, 1918, at \$52 a ton, retroactive until July 1st, 1917, and before that time at \$50 a ton."

We have, furthermore, the recent petition of the American publishers to the Attorney-General of the United States, asking him to order the Federal Trade Commission to start a new enquiry, based upon evidence obtained in Canada by employees paid by the Canadian Government. This proposed new enquiry is for the sole purpose of lowering the price of Canadian-made paper in the United States. Yet the petitioners make the astounding demand that the Canadian Government be asked to participate in these new attacks upon the Canadian paper industry in that country, with a view to ruining its market there. Effrontery could hardly go farther, although it cannot be denied that our own Government has invited the affront by the scandalous treatment they have allowed to be meted out to the industry at home.

I would not give the impression, however, that all newspaper publishers are unreasonable or unfair in this matter. In fact a large proportion of American newspaper publishers have lately shown a disposition

to dispense with their antagonisms and to do-business with the paper manufacturers on a business basis, recognizing that eventually business principles must prevail between two industries, so closely allied and so dependent on each other. In Canada we are still wide apart although even here there are publishers who do not approve of the application of political coercion to what is essentially a business situation. We have one of these exceptional newspapers in Montreal in the Montreal Gazette, which has always treated our industry with impartiality and the utmost fair play. The big French newspapers, La Presse and La Patrie, also are to be commended for their attitude towards us, as well as others I might mention. But what I want to say is, that the quarrel is not of the manufacturers' making, and that we have no desire whatever to prolong or continue it, nor do I believe, in the long run that the publishers as a whole will be found desirous to keeping up a fight which, eventually, can result in good to nobody.

In concluding my reference to this subject, let me say that in my opinion whatever excuse may have existed (and I do not for a minute admit there was any), for Government regulation of the paper industry—even on the showing of the publishers themselves—it no longer exists. The Government should take its hands off the industry, both at home and abroad. They should permit it the same opportunity to work out its own salvation that is enjoyed by every similar industry doing business in Canada.

Positions for Soldiers First.

A word or two about the labor situation. We are all aware that the conclusion of the war has brought a more or less serious industrial crisis in most of the countries involved. In our own country, the withdrawal, during the last four years, of hundreds of thousands of men from industrial pursuits and the transfer of thousands of men from their normal occupations to the making of war materials, created an abnormal demand for labor, almost impossible to supply. During that period, also, wages rose to abnormal heights. The end of the war brought about a necessity for a readjustment all along the line. In a few months from now the supply of labor will in all probability greatly exceed the demand, no matter what means are taken to absorb it. It should be our part, as it should be the part of every employer of labor in Canada, to see to it that this readjustment of labor conditions is made with as little friction and with as little hardship and confusion as the circumstances will allow. Our industry has undoubtedly suffered in the recent past by the insufficiency of satisfactory labor. We shall now be able to make good our deficiencies in this respect, and thereby to increase our output. Our first care should be to keep faith with those of our men who went into the army. On their return places must be found for them, equal in every respect to those which they surrendered in order to serve their country. After that, as good citizens, we should, and we assuredly will, do our utmost to absorb whatever surplus labor may be available. It is unthinkable that any man in Canada who wants to work should be unable to find fair employment. Already our Association has taken steps in the right direction and I am sure that each one of us is already co-operating in the movement and will continue to do so. The abnormal prosperity enjoyed by labor in this country during the last four years may not, perhaps, be maintained, but if not there will be compensating advantages in

reduced cost of living and in other ways so that the high standard attained will not be seriously impaired, but it is up to us all to do our best to keep conditions as they ought to be.

Waste of Trees at Festivals.

There is one other subject to which I should like to direct attention for a few moments and that has to do with the question of raw material. I am going into an abstruse discussion of the subject, although it is of sufficient importance to justify a great deal of attention and discussion, but I do want to allude to one or two facts in connection with it. We are all aware of what has befallen the paper-making industry in the States, through a too prodigal use of their pulpwood. We are aware, too, that our own supply of pulpwood is being consumed at an alarmingly rapid rate. I do not refer solely to its employment for the legitimate purpose of conversion into marketable commodities, so much as to its export in its unmanufactured state and particularly to its wanton and unnecessary destruction for no good purpose whatever. Every year, thousands of young but valuable spruce trees, owned, it is true, by settlers and other private individuals, are chopped down, their tops cut off and sold for a few cents apiece and carted off to our towns and cities there to serve for an hour or two at some festival. Not only is this an unnecessary waste of good material, but it also denotes short-sighted economy upon the part of the land owners who permit it to be done. These young trees potentially have a much greater value than is represented by the price paid for them when used in this way. In a few years' time, if left to develop, they would have a market value many times greater than in their undeveloped state, while, at the same time, their use as raw manufacturing material would contribute to the welfare of all. We are continually being urged to employ scientific methods in tree-cutting and to replant as far as practicable in order that there may not be a complete exhaustion of the supply, but here is a case where young growing trees are needlessly and uselessly sacrificed by the thousands, apparently without any one raising the least objection. Our forestry department could do no better service than in putting a stop to the practice.

Gentlemen:—I do not desire to delay the proceedings any longer, except to acknowledge once more my appreciation of your confidence in placing me at the head of your Association for the ensuing year, to ask your co-operation and support in making it one of the most successful and the most helpful years, from an Association standpoint, that we have ever known, and to promise you that nothing that I can do to help to achieve that end will be left undone.

Note.—The editor is provoked. We can't find our cut of Mr. Bothwell which we planned to use in adorning our magazine and introducing the new president to our readers, and we have sent the only picture we had to the Grain Growers' Guide so the farmers of Canada can see what fine and handsome leader the Pulp and Paper Association has.

Who's going to beat this record?

George Brackett of Holyoke has been at work with the American Writing Paper Company for 54 years. He entered the employ of the company on receiving his honorable discharge from the Union army in 1864, and his work since that time has been in the one mill.

Canada to Interpret the Empire

By SIR JOHN WILLISON.

Your president has told you I am a reformed newspaper publisher, and mentioned Bill Nye's reasons for becoming a newspaper man. I don't know exactly why I entered the newspaper business — I may have been shameless — I certainly needed the money, and need it yet. For my first engagement on a newspaper I received the munificent salary of three dollars a week and I paid \$2.75 for board; a friend asked me once what the Hell I did with the other quarter. I think, Mr. President, I may congratulate you on the success you have had in getting "into" the newspapers. That statement possibly is capable of two interpretations, but I am thinking to-night merely of the circumstances that when the armistice was declared in Europe you immediately started another conflict and took up the space in the newspapers which had been devoted to the war dispatches, and I don't suppose that any industry ever got so much free space, next to reading matter, in the history of the country.

I am not going to make a serious speech. You don't want one, and my serious speeches really are not very interesting any way. They are not interesting to me and I have often seen signs that they are not interesting to other people.

I do want to say, however, if you will bear with me seriously for a few moments, that we are facing in Canada a condition only less serious than that which we were facing during the war, and the appeal that I would like to make to Canadians of all classes and all sections is that we shall carry into the era of Reconstruction a spirit of sympathy and patience and tolerance and understanding beyond that manifested during the era of war, and if we carry that spirit into the next eight or ten months, we will enter, in my judgment, upon the greatest era of expansion and prosperity ever known in the history of Canada. We need sympathy and understanding between the East and the West; between Ontario and Quebec, and between labor and capital. It does seem to me that in these days anyone who deliberately excites unrest, who provokes needless agitation, has a great responsibility to answer for, and one can very much doubt if he is a good citizen of his country.

I am very glad to have here to-night at my side a representative of the great nation across the line; one is even more rejoiced because he represents the great American Navy. Nothing has been more remarkable in the last years of the war than the co-operation between the navies of Great Britain and the United States, and it does seem to me that Canadians and American alike, looking backwards through these last desperate months, will rejoice during all the generations that they were comrades in the great endeavor to restore freedom in the Old World and maintain freedom in the New United we can maintain for all generations free seas, free men, and a free world, and what more can any of us ask or any of us desire?

I think I may say to our friends from the United States that even before they entered the war we did not undertake to say in this country what their duty was. We were patient. We were not critical. We recognized that they had their own responsibility to face and their own country to manage, and whatever may be the fault of this young community — rash enough; even intemperate sometimes — we do recog-

nize the obligations of international good neighborhood during all the period of this war, and we ask that they shall bear that to our credit in the years to come, and may I venture just this one other observation. I think every Canadian must feel grateful to the United States that throughout all the period of this war they treated us with decent, generous, neighborly consideration. And I beg to say, gentlemen, in your name — and in the name of Canada, if I might — that the duty that we feel incumbent upon us in the future is to interpret the British Empire to the American people and do what in us lies to maintain for all the years to come amity and good neighborhood between the British Empire and the broad Republic of the United States.

Just a half dozen sentences more and I will close. We Canadians, through the valor and sacrifices of those who represented us at the front, feel that we have an honorable place among the nations and the one obligation which lies upon us beyond all others is to take care that those who fought for us, we shall not forget; that those who died for us, we shall remember; and as I have often said, if we will remember our veterans and our heroes as the United States remembered their veterans and their heroes who fought for them in the Civil War we shall have nothing with which to reproach ourselves in the years to come.

And then one other word, whether we are an equal nation, whether we are an Empire, or whether we are a partner in the League of Nations, I think we feel more strongly than ever before that we are for all the years to come an essential portion of the British Commonwealth; that we hold as never before the value of our Imperial citizenship. Wonderful old country, tested as never before in all her wonderful history and throughout four years — four bloody years — higher in the world's prosperity and more powerful among nations than ever before.

Let us be worthy of those who fought for us; of those who died for us; and of the British citizenship which is ours, and Canada will hold a place in the world of which none of us need be ashamed through the generations to come.

The Soldiers of the Industry

By F. J. CAMPBELL, Retiring President of the C. P. & P. A.

I was going to say that from time immemorial, but really only during the last four years has your retiring president proposed the toast to the boys at the front. This year, the boys are coming home, so we shall make this toast to "Our Soldiers."

I think we should keep in mind the final dispatch of that great British leader, Sir Douglas Haig, which was sent just forty-one minutes before the signing of the Armistice, and which reads: "Shortly before dawn this morning the Canadian troops of the first army captured Mons." Lest we should be too proud I should like to remind you of one of the most dignified documents in history, the announcement of the British War Office, which is as follows: "In the fifty-second month of the greatest war in history the French Army with the aid of our Allies have brought defeat upon the Enemy."

But, gentlemen, we are to-night particularly interested in those good men who left our industry to go to the front. Last year we had the pleasure of welcoming Captain Aeer and Sir William Preece. This year we are able to welcome back Col. Jones and Brig.-General White (applause.)

We do not know the names of all the men who left our industry to go to the front, but the names that we have, show that 3,092 officers and men left this industry to do their part in the great war. Of these gentlemen, 341 were wounded; 25 were missing, were taken prisoners and 240, most of whose names are on that shield before you, did all that any man can do. 13 gained the Military Medal; 10 gained the Military Cross; 8 secured the Distinguished Conduct Medal; 2 the Order of the British Empire, 1 the D. S. O., 1 the Croix de Guerre, and 1, Private Goode, the Victoria Cross. These men have fought for us and we are proud of their record, but, gentlemen, it is a question whether we have any right to be proud until such time as we have seen these men established in as good or better positions than they had when they went away.

This question of re-establishment is one that should interest the whole of our Association, as well as any member in it. Without discussing a problem which might be worthy of discussion in this toast, but which is too large a subject to discuss now, I would like to make one suggestion, and that is this: There are many large areas of waste land in this country that are not fit for farming and not bearing any timber, and it seems to me as though the Government might employ our returned soldiers in the planting of these areas with trees. They could be occupied under conditions not dissimilar with conditions of army life and I believe that as a transition method of employment it lieve that as a transition method of employment it would be worthy of the attention of the Government.

I would just like to say a word regarding our soldiers in general. I have a few figures here that are taken from the casualty lists from the London Times of January 3rd, 1919. I know you hate figures at a dinner as much as I do, but if you have patience for a moment you will see what I am driving at.

The casualty list is as follows:

German wounded, 4,000,064; dead, 1,600,000; prisoners, 618,000.

French wounded, 3,000,000; dead, 1,280,000; prisoners, 435,000.

British wounded, 2,032,000; dead, 658,704; prisoners, 171,508.

Canadians wounded, 155,799; dead, 53,491; prisoners, 3,575.

I am omitting the figures of our Allies to the South on account of the difference in conditions, but curiously enough their figures are almost identical with our own.

If you had time to put these figures down, and you did not, you would have noticed that the number of dead is almost exactly one-third the number of wounded, and when we come to the list of prisoners we find that the German prisoners number ten per cent of their other casualties. There are probably more because in this was included those on the Russian front. The Germans, 11 per cent; the French, 10¾ per cent; the British, 6½ per cent, but when we come to the Canadians we find that they were less than 2 per cent of the other casualties.

Gentlemen, we know the record of our men from Ypres to the great advance, and if these figures are

correct (and we have no reason to believe they are not) this will stand for years to come as an eloquent tribute to the fighting qualities of the men of Canada.

It has been our custom to take up a collection with which to send tobacco to the boys at the front. This year we propose to tender our donation to the Khaki League.

Now, as you know, fighting is never profitable, and I would like to repeat a story told us by Captain Edwards in a splendid address in the United States. A small British Tommy had brought in a large Prussian officer. The officer was very proud and very scornful, and finally he said: "You are one of the men who fight for money." "Am I?" said Tommy, "And what the hell do you fight for?" The Prussian said, "I fight for honor." "Well then," said Tommy, "we both are fighting for what we have not got."

Gentlemen, last year we raised the very respectable sum of \$1,300 for tobacco for the boys. This year, our object is to get just a little more to give for beds and meals for returned soldiers. The donation will go to the Khaki Club League and the Khaki Club in the month of December alone supplied 6,000 beds and 15,000 meals for Returned Soldiers. We are at one disadvantage because we have not got our regular booster, Mr. Howard Smith, but I telegraphed him and asked him to let us know what he would do. He first telegraphed, sending his good wishes to the dinner, and told us to put him down for \$100. Then he wired again and said, "If five others will join me I will make it \$250."

The gathering quickly caught the spirit and in ten minutes there were fourteen subscriptions of \$250 each. They were: Howard Smith Paper Mills Co., Canada Paper Co., Brompton Pulp and Paper Co., Preece Bros. Co., St. Maurice Paper Co., Ontario and Provincial Paper Co., the Toronto Paper Co., the Riordon Pulp and Paper Co., the Spanish River Pulp and Paper Mills, the Laurentide Co., the Belgo-Canadian Pulp and Paper Co., Mr. Victor Mitchell, Abitibi Power and Paper Co., the Bathurst Lumber Co., the Great Eastern Pulp Co., and the Chicoutimi Pulp Co. While these subscriptions were being made a squad of collectors went around with capacious receptacles.

Now, gentlemen, there is not a man in this room, nor in the whole of Canada, but who knows, either personally or by reputation, one of our esteemed contemporaries who left this country practically as a Lumber Jack, as you might say, with very little experience, and who went to France in charge of 20,000 men and is one of the men who as much as any other man had to do with the winning of the war. When he left you knew him as "Jack" White. He now returns to us as "Brigadier-General White." We will now hear him.

What Our Soldiers Did For Us and What We Should Do For Them

By BRIGADIER-GENERAL J. B. WHITE.

I don't think I am boasting, gentlemen, when I say that Canada can well be proud of what she has done in the war. From the very start, the sending out of the First Contingent was a very fine piece of work, down to the finish of the war, when I am proud to say that it was a Montreal Regiment who marched into Mons first (applause.) The Canadian Corps was right

at their heels, and the British Army was going forward all along the line. I got into Mons the day after the Armistice was signed, and I must say that I was very proud that I was a Canadian, and proud that it was the 42nd Battalion of this city that went in. Every regiment from Canada was eager for the honor, but I was glad it fell to our city to have the fine, old, 42nd Battalion, who had gone all through the war, go in first.

I don't need to start to tell you about what the Canadian Army did in the war. You know just as much about it as I do of the number of battles from Ypres, right through to Lens, Hill 70, Passchendaele, Amiens, and finally Mons. It is something to be proud of. The Canadian forces were there and I think it is something we can be proud of that we can say that the Canadian Corps was never called on to do anything in this war that they did not carry through, but, first, gentlemen, I must refer to the fine officer who led them, Sir Arthur Currie, one of the greatest soldiers in France, a man who was absolutely relentless when a fight was on, but who had the heart of a woman when it came to totalling up the casualties.

Field Marshall Foch — Marshall Foch — picked out our soldiers as shock troops and when the Germans were wavering around the first of August, our Canadian Corps moved, and it was the best carried out movement of the war. They moved to Amiens, and they arrived in time to go over the top. I think it was at the battle of Amiens that the back-bone of the Hun army was broken. After we had captured the ground in Amiens we learned that they had in preparation another attack, and I don't think I am giving away any military secrets (it is well-known now) that another successful attack by the Boches on Amiens would have had serious results, but another Canadian Corps with the British and Australian corps jumped in front of Amiens, and it crumpled up the best troops the Germans had.

But, gentlemen, think of the Corps going over the top with a piper sitting out on the front of a tank; the target for the whole German army, and that piper led the Canadian forces into battle on the top of a tank, playing his pipes.

Take Colonel Peck, one of the oldest Colonels in the Canadian army — he led his troops over the top, his piper beside him. When the attack had gone through successfully, and Colonel Peck was standing looking over the field, and his piper marched back to him very proudly he was shot down by a sniper who had been hidden and overlooked — a machine gunner, rather.

Colonel Peck called upon his men to volunteer to put the machine gun out of business, and a second lieutenant said, "Leave them to me," and he walked around and got behind them, and killed every one of the machine-gun crew, and captured the gun himself. What chance had the Boche against men like that?

Another great general who helped wonderfully to the successes we had was Lieut.-General Turner (applause). The Canadian corps, after going over the top at Amiens, was pulled out of there and sent back to Arras, to make that attack on what as you know was the strongest fortified position of any battlefield, and when they arrived in front of Arras they were up to strength, due to the very excellent management and the way the reinforcements were sent up. Shortly after that they went over the top, and

you know what happened. They went up against the hardest line in the world and carried it.

I was with Major-General MacDonald the night before the attack at Queant Switch, and I never saw happier men. Every man was keen to get into it, and the Division that we had were very sore about being held out.

We know what happened in front of Cambrai. We had very heavy casualties there, but our good troops stuck it out right through all the way to Mons.

I am not boasting a bit about the Canadian Army. All the Allied troops were the same. The British Army, since the beginning of time never fought up to the high standard that they did in the autumn of 1918.

Gentlemen, while we are very proud to be Canadians I think we have even greater reason to be British. We are members of that great British Empire, that fought against all odds, and who went through some very, very dark times last March and April. I think much more serious than the people thought at home, but we would go into a Divisional Headquarters (and at that time I was employed in a very humble capacity with a very humble branch of the service; we had to get out the defence timber), and in a Divisional Headquarters when we knew it was going very very hard, and we would ask them "How is it going?" and they would answer, "Fine, fine, we are holding them. They are making gains but our line is intact!" That spirit was through the whole army.

And then, when the time came to go forward, we had the reinforcements, thanks to the great Republic to the south of us, who sent millions of men over there. That was the reason why Foch could throw his reserves in, because he knew he had the American army coming on, and they were ready to take their places and from the time we started back, it was a different story. The hard time disappeared; every man was cheery, and I think the finish was great, because I think the Boche was beaten far more severely than people over here realized.

A Square Deal for the Returned Soldier.

Now, gentlemen, there is just one thing I would like to say, and that is, in our business we have a great opportunity of doing something for the returned soldiers. I don't hold with some people who say that we are going to have to look after all the soldiers who come back.

We are not going to. Seventy-five per cent of the soldiers that return are good, strong, steady industrious and independent fellows who will make their way anywhere and not look for charity. But, gentlemen, the other twenty-five per cent and possibly more or possibly less will need all the assistance we can give them, and they require a lot of sympathy, and don't think when we take on a returned soldier that we should expect to get 100 per cent efficiency, or 75 per cent even, but if we get even less, I think we can well afford to take and put these men back to work and help them. And one way that the lumberman can help is in the way that Mr. Campbell has referred to. We have vast areas of burned-over lands; lands that have been settled and abandoned, and that class of work will appeal to the men who have been gassed. There is no better way to help these men to get back their health and to become good citizens than for the Government to start a movement and the lumberman to co-operate, and send these men into the hills and mountains to plant the trees. Don't expect you are going to get 100 per cent efficiency, but for many dollars that you put into tree

planting the country will reap many dollars in return, and it will give the men a chance to get back their health. They made a tremendous sacrifice going over, and while we talk about all our fine officers and so on, the men who won this war are the soldiers; the men who left fine comfortable homes and went out and lived in the mud and stood the hard grind and the shelling and everything in the way of torture that men could stand, and were still cheery.

If you could see, as I did, the men the last day before the armistice was signed, as they march through Mons; their buttons shining, and right on their toes, you would feel that nothing we could do for them here was too much.

Don't Profit by Buying From the Boche.

Just one other thing I would like to mention. I do not believe in harboring bitter feelings or anything else along that line, except in very exceptional circumstances. I think we have exceptional circumstances now. I hope we will not forget this war too soon, and if, after peace is signed, Germany attempts to break in to our trade and commerce, and sell us stuff, I hope that you men in this country will be big enough and strong enough to refuse to buy from them. We want to always remember that while we may save a few cents or a few dollars on an article, that every dollar that we save has been spent many many times over in our own flesh and blood. I had a great opportunity—many opportunities during the last six weeks of the war to see what they did to that beautiful country of France, and beautiful Belgium, for up to the last day of the war the Hun carried on his cruelties. I went through Lille and Rubaix and many other cities on to Mons during the last ten days, and while I was motoring through I did not see an animal. They did not leave a cow to supply the sick people with milk. They left nothing but a few vegetables in the ground which they could not take away, and that is all they did leave.

I heard of a case of a little French woman who had five times been thrown into prison, and each time she got out she went to the British Compound and threw the soldiers tobacco and provisions.

I don't intend to tell you anything more about that. You have all heard enough. Some of the things I have seen myself I hope I shall soon forget, and I hope when you look at the list of dead out of our branch of the business, that you will realize what it cost us, and I would like to see every boy in Canada memorize what has been written:

"In Flanders field the poppies grow,
Between the crosses, row on row."

It is a subject that affects me very much all the time, and I hope when we are thinking of the dead, we shall remember the ones who are coming back, and do everything we can to help them to get back on their feet, and be the good citizens that they were before they went to the war. And right here I would like to say that after two and a half years in France I can truthfully say, that the best bunch of men in the world, as far as conduct is concerned, are our troops in France, and I mean ALL the troops in France. They were above reproach, and even when they got back into the reconquered territory, their whole aim after they got through beating up the Boche was to try and help the refugees, so I hope we in turn will do everything for them.

THE COLLECTION FOR THE KHAKI LEAGUE.

Mr. CAMPBELL: Gentlemen, we have got fourteen subscriptions of \$250 each, and that, together with the cash in the pot, brings the total amount collected for the Khaki League up to *four thousand two hundred and forty-seven dollars*. Every dollar of that money will be well spent. The Guardian Angel of the Khaki Club is in the gallery, and I ask for three cheers for the Matron of the Khaki Club of this city (applause and three cheers).

VOICES: Speech! Speech!

Mrs. J. DINHAM MOLSON: Gentlemen, I cannot express to you the gratitude the Khaki Club will feel when they hear of the generous donation which you have given tonight. I cannot speak to you, but I can tell you that not one cent of that money will be ill-spent.

Then Lieut. Gitz Rice and Mr. John Steele (U.S.A.) entertained with an excellent selection of songs, they were greatly appreciated.

Note: The speeches of George W. Sisson, Jr., President of the American Paper & Pulp Association, Capt. Dudley Field Malone, collector of the Port of New York, and Henry A. Wise, counsel for the Newsprint Manufacturers before the Federal Trade Commission will appear next week. Don't miss them!

FOREST SURVEY BY AEROPLANE.

The editor followed the crowd last week and visited the excellent exhibit of pulp and paper mill equipment at the Canadian Fairbanks-Morse salesrooms. Among the interesting objects was a lead lined pump for sulphite mills. Engineers from the Laurentide Co. spent nearly two hours trying to find some trick in the demonstration of a pulley on crooked shaft running straight in S.-K.F. Bearings. The equipment shown was but a small fraction of the \$700,000 stock carried in the building. A useful curiosity is an oil can with a spout that can be bent in any shape. Two recent orders of an unusual character were for a Chinese cook and for gas works for a sulphite mill. Both were satisfactorily filled.

W. J. Clarke and M. Collier, of the Gulf Pulp and Paper Co. were also viewing the exhibit. Mr. Clarke says there is no truth in the rumour that they will build a paper mill. He added the interesting item of news that Capt. Janney, one of the first Canadian aviators to cross to France is going to conduct a survey of forest lands this summer by airplane. He will go 600 miles inland, north of the lower St. Lawrence. His camera, at 10,000 feet elevation takes an area with a radius of 20 square miles and the picture includes compass directions. By flying in parallel lines and taking pictures that overlap slightly, it is possible to map a vast area in a short time and do it more accurately than would otherwise be possible.

Capt. Janney's address is National Bank Booth, Ottawa.

SPRUCE FALLS GOING AHEAD.

The Pulp and Paper Magazine is advised from the head office at Bradford, Pa., of the Spruce Falls Pulp and Paper Co., that operations are expected to begin in a few weeks at Kapuskasing, Ont., where the plant will be located. Plans were formulated some time ago for a 100-ton ground wood mill and later a paper mill, of which notice was first given in this Magazine in December, 1917. With the prospects of several new mills there will soon be a movement to find and extend new uses for paper and pulp products.

PULP AND PAPER NEWS



Judgment was rendered in favor of the Western Fuel Co. for an amount of \$2,730 with the Rainy River Pulp & Paper Co. The latter disputed on the ground that the coal would not make steam and put in a counter claim for \$10,000 for damages due to being forced to use inferior coal. This was disallowed with costs.

Frank J. McGovern, representing F. C. Huyck & Sons, makers of felts and jackets was in Montreal last week. He says their new mill at Arnprior is already supplied with a 240 in. dryer, built by Bagley & Sewall and will soon be turning out their well known product.

Among the visitors from New York at the Paper Makers' Convention were T. J. Keenan editor of "Paper"; R. S. Kellogg, secretary of the Newsprint Service Bureau; Henry A. Wise, attorney for the Newsprint Manufacturers; Capt. Dudley Field Watson, U.S.N.; and Geo. W. Sisson, president of the American Paper and Pulp Association. They seemed much pleased with the home-like atmosphere of our family reunion.

N. L. Martin, secretary of the Canadian Paper Trade Association, Toronto, was in charge of the big staff which counted, recorded, audited and banked all the cash received in the recent Salvation Army campaign fund conducted in Toronto. The services of Mr. Martin and his large band of workers were willingly donated, not one cent being charged for their labor.

J. Frater Taylor of Toronto, has been elected a director and vice-president in charge of finances of the Canadian Car and Foundry Co. Mr. Taylor is well known to the pulp and paper industry, being a former President of the Spanish River Pulp and Paper Mills.

J. C. Saul, who has been editor-in-chief of the publications of the Macmillan Co. of Canada, in Toronto, for the past thirteen years, is leaving the service, and was presented by the staff with a magnificent club bag. Montrose Liston, of London, has succeeded Mr. Saul.

A provincial charter has been granted to McAlpine Publishers, Limited, with head office in Toronto, and a capital stock of \$100,000.

W. T. McKnight, who for twenty years has been a valued member of the Toronto Globe staff, has taken a responsible position with Low's Toronto theatres. His colleagues presented him with a handsome walnut humidor, on the occasion of his departure.

A fire broke out in the waste mills of John M. Lalor, 610 Eastern Ave., Toronto, last week, and did damage to the extent of \$500 to the building and \$10,000 to the contents, owing to their inflammable nature. Mr. Lalor had intended installing a sprinkler system on the very day that the fire occurred and had all the material on the premises.

The many friends of I. D. Bradshaw of Bradshaws, Limited, manufacturers of waxed papers, Toronto, will sympathize with him in the loss of his mother, who died suddenly at her home in Toronto where she had resided for fifty years.

A charter has been granted to the Black River Pulpwood Co., Limited, of Montreal, with a capital stock of \$400,000 to carry on lumber, timber, pulp and pulp wood operations.

A. C. Manbert, President of the Canadian General Lumber Co., Toronto, who was nominated by the lumber manufacturers of Ontario as their representative to visit England to conduct an educational campaign, under the auspices of the Ontario Government, in regard to the increased use of wood products from the provinces in the Old Country, has accepted the appointment and will go overseas about the middle of the month.

Captain R. R. Barber, President of Gummed Papers, Limited, Brampton, Ont., who has been overseas for some years, is still in England, and it is not yet known when he will return home.

The Canada Bread Co. of Toronto, Montreal, and Winnipeg, announce that since the removal of the restrictions on the wrapping of bread, they will again start sealing a large portion of their output, the same as they did before the regulation preventing wrapping went into effect.

Henry E. Smallpice, who began his career with the Toronto Globe in 1865, and is one of the oldest active newspaper and advertising men in Canada, recently celebrated his seventy-first birthday.

The death occurred last week of E. G. O'Connor, at one time managing editor of the Montreal Star, and also general manager of the Montreal Herald for some years. He was eighty-three years of age and was at the head of the Burland Lithographing Co. for a long period, and later was business manager of the Standard.

William Findlay, late business manager of the Journal newspapers, Ottawa, has entered upon his new duties as advertising manager of the Toronto Globe.

Gummed Papers, Limited, Brampton, Ont., have just closed a most satisfactory year and report that the prospects for the coming one are exceptionally bright. Considerable new equipment has been added, and a new line of waterproof paper is being turned out, for which E. H. Wilkinson of Toronto has been appointed selling agent.

E. Pullan, of Toronto, who is known as the "Waste Paper King," sailed for England last week on the Olympic on a business trip, and will be absent six weeks.

John M. Imrie, manager of the Canadian Press Association, Toronto, is at Old Point Comfort, Va., for a few weeks, and enjoying a holiday after his arduous duties on behalf of the publishers in connection with the proceedings in the newsprint appeal.

A federal charter has been granted to Knox Bros. with a capital stock of \$1,000,000 and headquarters at Montreal. The company is empowered to carry on business as timber merchants, sawmill proprietors and timber cruisers and to manufacture, buy, sell and deal in timber and wood of all kinds and also to buy and deal in timber limits, growing timber, etc.

E. A. Crippen, manufacturers' agent, who represents several paper mills in the Dominion, spent the past week in New York on business.

George Wilcox, who is now aged seventy-two, and claims to be the father of the Rural Mail Delivery System, spent a few days in Toronto last week on a visit. Several years ago he began the agitation of a free postal delivery to the farmers of Canada. He possesses a remarkable and elaborate scrap book which is a complete record of his efforts to bring the service into effect in the Dominion.

Dextrine Products, Limited, Brampton, Ont., are now manufacturing corn and potato dextrine and also stripping gum and ending gum for paper box makers, padding gum and flexible glue gum for bookbinding, for which the company report bright prospects for the coming year.

The many pulp and paper friends of J. E. A. Dubue, are congratulating him on the attainment of his forty-eighth birthday, which he celebrated on January 21st. Mr. Dubue spent several years in banking before becoming prominently identified with the pulp and paper industry, in which he is one of the leading factors through his connection with the Chicoutimi Pulp Co. and later the North American Pulp and Paper Companies.

SIR WILLIAM GAGE RESIGNS PRESIDENCY.

At the annual meeting of the Kinleith Paper Mills, Limited, which was held in Toronto last week, Sir William J. Gage, who has been President of the Company for many years, resigned that position to become Chairman of the Board. W. P. Gundy was elected President, H. F. E. Kent, Vice-President and Man. Director, and George H. Jefferson, Secretary-Treasurer. During the past year considerable improvements were carried out to the plant at St. Catharines, No. 2 machine room having been practically rebuilt. The company now have one of the best machine rooms of any mill in the Dominion. Several other alterations of a minor character were also made, and the company presented an encouraging report on the operations of the past year. It is not their intention to bring out any new lines in 1919, but to concentrate on certain standard ranges in order to get better production and a better product.

At the annual meeting of W. J. Gage and Co., manufacturing stationers, Toronto, Sir William J. Gage, founder of the business, also resigned the Presidency to become Chairman of the Board. W. P. Gundy was elected President and General Manager; H. H. Love, Vice-President; H. F. E. Kent, Assistant General Manager, and A. G. Parker, Secretary-Treasurer. A satisfactory report on the business done during 1918 was presented, and the outlook is regarded as promising for the coming year.

WOULD REPRESENT CANADIANS IN FRANCE.

The Pulp and Paper Magazine has just received a letter from a consulting engineer in France who would like to represent American and Canadian manufacturers of pulp, paper and chemical products in France, Belgium, Italy and Spain. There have also been a number of letters received emphasizing the opportunities for Canadian trade with Great Britain. We shall be pleased to put readers in touch with people on the other side of the water. There seems to be a growing desire among our distant friends for Canadian products and few lines offer the attractive possibilities connected with the pulp and paper industry.

FINE RECORD IN FIRE PROTECTION.

The annual report of C. J. Hall, superintendent of Forest Protection Service in Quebec, shows that the number of forest fires during the past year have considerably decreased. There were 430 fires which devastated about 23 square miles of forest lands out of a total of 48,800,000 square miles which are being operated for forestry work. The total damage amounted to \$5,557, of which \$2,000 was attributable to the railways. The fire protective associations have done fine work. The use of a hydroplane for safeguarding the forests of Quebec province from fires is strongly recommended, and it is believed for many reasons the service of such a machine would prove highly efficient.

SO IS A MILL.

An office is a pleasant place—at least a certain kind. That has a certain brotherhood, where day by day you find,

Some neighbor with a new idea he's glad to pass along
A certain sort of friendliness, a certain sort of song.

There is a certain duty that we owe to other men
To help them when they need a lift, to steady them again.

An office can become in time, to man and girl and boy
A certain kind of fellowship and work a certain joy.

— Douglas Molloch in American Lumberman.

GOVERNMENT WILL CONTROL THE WATERS.

The Lake of the Woods Control Board has been formed in order that there may be sufficient and proper conservation and control of the waters of the Lake of the Woods in the interest of navigation and other interests. The New Board will represent both the federal and the Ontario governments. W. J. Stewart, hydrographer for Canada, and consulting engineer for the Department of Exterior Affairs, and J. B. Challies, superintendent of the Dominion Water Power Branch, Department of the Interior, Ottawa, will represent the Dominion, the former as presiding officer. The Ontario government will also appoint two representatives. The news that the waters are to be controlled will be welcome to lumbermen, pulpwood men and paper mills in that district.

MR. HOWARD SMITH OBSERVES BIRTHDAY.

C. Howard Smith, former President of the Canadian Pulp and Paper Association, celebrated his forty-sixth birthday on February 5, and received the congratulations of a large number of friends in the trade. Mr. Smith, who was born in St. John's, Quebec, was educated there and has been identified with the paper business for many years. He is the President of the Howard Smith Paper Mills, who operate modern plants at Beauharnois and Crabtree Mills, Que., making high grade papers both for the domestic market and for export. He is also President of the New Brunswick Sulphate Fibre Co. and a director of the Federal Paper Co., Montreal. As the Chairman of the Montreal branch of the Canadian Manufacturers' Association and a member of several leading clubs, he is widely known. Mr. Smith resides at 4129 Western Avenue, Westmount, and is one of the outstanding figures in the pulp and paper industry in the Dominion which he has done much to bring to its present status and prestige.



UNITED STATES NOTES

In interpreting an award of the National War Labor Board, John Lind, umpire, has ruled that bonuses or premiums given by the International Paper Company to its employees shall not be counted as increased wages and as such used to off-set back wages ordered paid by the decision of the board. He has also ruled that the eight hour day as applied to employees within the milling plants, and the nine hour day as applied to employees in outside operations shall not be interpreted so as to cause a reduction in wages to any employees. Both interpretations were approved by the War Labor Board.

The Rainbow Mills at Rainbow, Conn., recently sold to the Stanley Works, are not to discontinue paper making operations as had been supposed. F. B. Oldham has bought all the machinery and has secured a lease of the buildings for five years. This means that the water power facilities are not to be developed for the next two or three years. Operations at the mills were resumed during the last week in January under the name of Rainbow Paper Company. Mr. Oldham continues to retain his interests in the Hartford Paper Company and the General Paper Company.

Explosions that wrecked the factory of the American Analine Products Company at Nyack, N.Y., last Friday, resulted in three fatalities, injuries to twenty persons, and a loss estimated at \$1,000,000. Officials of the company said the fire that caused the blow-up had its inception in the mixing-room where some chemicals exploded. The building occupied by the dye company was formerly the site of the Peerless Silk Company. It was a five-story structure of mill and masonry construction, and very old. The final explosion tore the building to pieces.

Great difficulty is being experienced by War Department officials in the matter of war contract adjustments. While it is apparent that many manufacturers will have to undergo hardships in connection with these adjustments, it is also evident that there are some who are trying to profiteer at the Government's expense. It is intimated that all such cases are going to be dealt with in the severest manner.

The General Chemical Company during 1918 had a net profit of \$4,045,639, as against \$7,671,181 for 1917. The 1918 showing is at the rate of \$18.96 a share after the deduction of preferred dividends, against \$42.95 a share for the previous year. Heavy war charges and decreased gross business were responsible in a large degree for the falling off in income. More than \$4,000,000 were expended, according to the company's report, on construction during the year, and \$2,598,915 for repairs were charged to expense. Since the formation of the company in 1899 the total repairs charged to expense, together with annual reduction for dismantlements, aggregate \$21,619,844.

Articles of incorporation have been filed with the Massachusetts Commission by a new concern calling itself the Consolidated Paper Bag Company. The capitalization of the new company is given as \$150,000, made up of 1,500 shares of common stock with a par value of \$100.

A new federation of commercial organizations to be known as the Mississippi Valley Association has been organized in that region for the purpose of promoting the business welfare of the valley. Committees are being formed to tabulate the improvements desired in each industry. Rates and transportation are the problems which form the chief interest and concern of the paper industry in the valley.

The Eddy Paper Company, which now has mills at White Pigeon and Three Rivers, Michigan, is planning the addition of a board mill and container box plant, the location of which has not yet been decided upon. The company, at its annual meeting recently held, has voted an increase in its capital stock from \$1,000,000 to \$2,250,000.

Announcement has just been made to the effect that William C. Powers, until recently sales manager of the Great Northern Paper Company, is planning to form a general selling agency in Europe. The projected organization is to have company offices in London, with branches in the principal continental cities. Paper, boards, pulps and allied lines are to be sold by the agency. Arrangements are said to have been entered into by Mr. Powers for the handling of the products of the mills which sell the products of the Canadian Export Paper Company of Montreal.

Construction work on the new Stevens Point, Wisconsin, mill of the Onida Paper Company has been completed in the record time of six months. Heretofore it has required from twelve to sixteen months to complete a plant the size of the new mills. Machinery is now being installed, and it is expected that 74 men and 22 women will be at work some time this week. A government scale of wages, established in the paper industries, will prevail.

The Gibbs-Brower Company, 261 Broadway, New York, has added a new department which is intended to assist anyone desiring either to buy or sell a paper mill. Ogden Brower, Jr., who is to have charge of this department, plans to list all mills that are for sale, and then make investigations as to their equipment, capacity, general condition, facilities for making shipments, etc. The idea is to save the prospective buyer the trouble of making investigations himself, and to facilitate the matter of bringing the seller and buyer into touch with each other, thus proving of invaluable aid to both parties.

Incorporation papers have been filed at Hartford for the St. George Paper Company of Norwalk, Conn. The new concern is capitalized at \$300,000. Its officers are: E. G. and E. W. Murphy, of Norwalk; W. H. Odell, of Norwalk; Johannes Anderson and Morris Gentzler of New York City.

Lieutenant A. Klipstein, Jr., infantry, U.S.A., has again taken up his former connections with A. Klipstein & Co., 644 Greenwich Street, New York City, having just received his discharge from the army after a service of eighteen months. Lieutenant Klipstein was lately attached to the General Staff.

THE MARKETS

CANADIAN MARKETS.

Toronto, February 3.—The tone of the paper market is growing stronger each week and business which has been rather slow since the commencement of the year is improving in many lines of paper. As stocks grow lower, the conviction is driven home that there is not likely to be any fall in prices. While there are some who expect quotations to take a drop, the majority of those who have calmly considered the situation are confident that present values will hold. It is stated that, were the government investigations terminated, there would be much accomplished in the way of stabilizing the market, but the newsprint price is not yet definitely decided and as the probe in book prices is to continue, there is naturally a disposition on the part of some firms to hang back. Controller Pringle has sent word to Toronto that he will visit Toronto on Wednesday of this week for a conference on the question of the sale, price and supply of book and half-tone newspaper. It is over a year ago that he conducted the first sitting in this inquiry, and a questionnaire was sent out to the mills and the government auditors set to work. They spent several weeks in the offices of one large company, and it is stated that the other mills were not investigated, as the revelations in regard to the high cost of production did not seem to warrant proceeding any further with the examinations. However, the publishers of periodicals and farm papers think differently, and as a result of their recent visit to Ottawa, the hearing will go ahead. It is stated that the consumers of book paper hope to stop any increase in price, even if they do not succeed in getting the figure lowered. The mills, on the other hand, are ready for the inquiry, and affirm that they will show conclusively in some instances, particularly on No. 3 book, they have been supplying customers below the actual cost of production.

There is no change in the general pulp situation and prices remain unchanged. It is hoped by the mills that a large export business will be done, but all producers are waiting for freight rates to come down somewhere near the point that they were before the war. A large portion of the cargoes of outgoing vessels is still taken up by the British Government, and until rates are definitely established, there will be hesitancy about shipping. The charges are coming down all the while, but slowly. When they are stabilized there is hope that Canadian pulp and paper products, which are the equal of any in the world, will find a profitable outlet.

Groundwood is selling from \$30 to \$32 at the mill and the demand is moderate. Sulphite pulp is bringing, for the easy bleaching variety, around \$90 to \$95 and bleached commands \$120 to \$125, with a fair amount moving, although buying has eased off considerably.

It is gratifying to learn that exports of pulp and paper continue to gain, and as each month's trade returns are published, they show that the volume of business for the current fiscal year will run in exports over the estimated amount of \$100,000,000. For the first eight months there is an advance of \$16,832,627 over 1917. Australia, New Zealand and Japan are taking more and more paper and chemical pulp. This will have a tendency to keep up prices at home, and all the mills will be able to find an outlet for their surplus productions.

With the revival in the confectionery trade as a result of the release of the regulations governing the use of sugar and the resumption of bread wrapping, which has not been followed for months, manufacturers of wax paper report their business as increasing steadily. The factories in this line have been quite busy all along as the uses of wax paper multiply. There is a call more insistent than ever for the sealed loaf, owing to the prevalence of influenza and other diseases in many communities. Toilet and tissue mills have all the business that they can attend to and envelope plants, box factories and other allied lines are fairly busy. Before the war was over last fall Canada was visited by many representatives of other countries in search of paper of all kinds and some fancy prices were offered. To the credit of the Canadian plants they refused to take aboard foreign obligations, although offers in many cases were flattering. The mills stood by their customers as the demand was such that they could not overtake the orders in hand. Now plants have abundance of labor and are able to operate to the utmost. Some foreign business is being attended to, and each week sees fresh inquiries. Business opportunities are opening up on every hand, and mills will be able to dispose of their surplus lines to advantage.

Reports from operating companies in pulpwood show that the cut is not coming along as rapidly as it should owing to the mild weather and absence of snow and ice in many parts of Ontario and Quebec. It will be fully a year before there is any appreciable drop in the price of wood. Wages of bushmen, cost of board and supplies still keep up pre-war levels. As raw material such as wood and wages form the bulk of the expendi-

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES ²⁰⁷⁴ ₂₀₇₅ MURRAY HILL, NEW YORK

We buy all kinds
of Canadian

WOOD PULP

At Top Prices.
Write us and be
convinced.

ture in the finished article of pulp and paper, there does not appear any probability on the surface of an early decline in prices. The whole order of things must first change and if confidence prevails there is no doubt that 1919 should be the banner year in the industry. While there may be no extensions to plants until late in the season several mills are getting ready for the time when it comes to put on sail.

The rag and paper stock market continues dull. White cuttings and shavings as well as book and magazine stock are moving, but news and mixed papers are dragging. There is an indifferent demand from consumers, which has resulted in lower prices. A fair requisition for both wool and cotton rags is evidenced, while prices hold firm.

Rags and Paper Stock.

No. 1 white envelope cuttings	.....\$5.00
No. 1 soft white shavings	.....\$4.20
White Blanks	.....\$1.30
Heavy ledger stock	.....\$3.00
No. 1 magazine	.....\$1.70
No. 1 book stock	.....\$1.40
No. 1 new manilas	.....\$2.20
No. 1 print manila	.....\$1.15
Folded news	.....80c
Over Issue	.....\$1.00
Kraft	.....\$4.00
No. 1 clean mixed papers	.....70c
No. 1 shirt cuttings	.....\$14.00
No. 1 unbleached cotton cuttings	.....\$11.00
No. 1 fancy shirt cuttings	.....\$9.50
No. 1 blue overall cuttings	.....\$9.25
Bleached shoe clip	.....\$10.00
Unbleached shoe clip	.....\$9.50
White cotton hosiery cuttings	.....\$10.50
Light colored hosiery cuttings	.....\$8.00
New light flannellette cuttings	.....\$9.25
No. 2 white shirt cuttings	.....\$9.00
City thirds and blues (repacked)	.....\$4.00
Flock and satinettes	.....\$2.10
Tailor rags	.....\$2.00

NEW YORK MARKETS.

New York, February 1.—The stage is set for the annual gathering of paper and pulp manufacturers of the country at the convention of the American Paper and Pulp Association and its affiliated organizations at the Waldorf-Astoria Hotel next week, and in the meantime, business is held very much in abeyance. Demand for the various grades of paper has been quiet this week, a waiting tendency having been evident throughout the market. Doubtless some of the reports spread around concerning the dullness of the situation have been exaggerated, but at the same time there is no questioning the fact that the paper mills of the country are badly in need of orders for their product. Accepting the opinions of more conservative authorities, it can be said that the industry is not in any such dire condition as some of the reports would infer. Virtually no mill, with the possible exception of certain newsprint plants, is running at capacity. All are in want of business, and yet, basing the estimate on reliable information, it can be stated that paper mills as a whole are operating at about 60 per cent of full capacity. The feeling prevails that after the gathering of manufacturers and jobbers in New York, the market will become more stabilized, and that buying will be revived on a more normal scale. There is scarcely a member of the local trade who takes a bearish view of the outlook; the opinion

being general that activity lies ahead for the industry.

Newsprint continues to move into consuming channels in a consistent manner and in comparatively large volume. Nevertheless demand has fallen off somewhat during the past few days. Supplies are being shipped on contract with regularity, but there is not the number of transient buyers in evidence as prior to the holiday season. Advertising in the metropolitan newspapers has been much lighter since the first of the year. This has been made apparent by the reduction in size of newspapers, and the situation locally can be taken as an indication of conditions elsewhere in the country. With the consumption of newsprint on the decline, buyers naturally are letting up in their purchasing, while the fact that the newsprint price question has been re-opened also has a tendency to cause consumers to hold aloof until they learn what the outcome of the hearings is to be.

Book papers are in about the same position. The market as a whole is quiet, yet quotations are generally maintained. Some mills are reported to be granting slight concessions, but the majority of manufacturers are of the opinion that a reduction in prices would, for the moment, fail to have the desired effect, and therefore continue to name the same figures to buyers. Tissues are in moderate demand. No. 1 and No. 2 white tissues are sought in fair volume, and prices are unchanged at around \$1.15 to \$1.20 f.o.b. mill for the former and \$1.05 for No 2 white tissue. Wrappings are in routine demand. Quotations have not been altered, but there is a rather easy tone to the market.

Fine papers are decidedly dull. What buying is current involves almost entirely small quantities of stock, which consumers or jobbers have direct need for, and at best the demand is no more than 50 per cent of normal. Prices are irregular and in the main nominal. Cost of production is practically the only sustaining factor in the market, and indications are at least some manufacturers would accept orders at concessions in price. The Government is commencing to place contracts for sizable tonnages of bond and ledger papers, however, and signs are not wanting that other buyers will soon be in the market for increased supplies, so that the situation is not near as gloomy as some have been wont to paint it.

Boards are in restricted demand and prices largely nominal. Mills are quoting at a basis of about \$52.50 per ton for chip, but few important buyers are in the market, and it is questionable just what are the real market values of board. Raw material has dropped sharply in price during the past few days, and this, of course has a weakening influence on the price of boards.

Groundwood.—There has been little fresh demand for mechanically groundwood. Consumers for the most part have found their contract supplies ample to fill their current requirements, and have generally evinced little or no desire to buy in the open market. Prices have declined slightly. Offerings of No. 1 pulp at \$28 a ton air dry basis f.o.b. pulp mill have been noted, and talk has been heard of some supplies being available at \$27.

Chemical Pulp.—The market for chemical fibres is characterized by quietness. Buyers in general have held aloof, excepting as regards limited tonnages for which immediate need has developed, and the movement of supplies into consuming channels at best has been light. Prices in certain instances have undergone slight revision in a downward direction, but on the whole values are maintained. Producers as a rule view the con-

WOOD PULP TRADING CO., Ltd.

30 East 42nd Street, New York City

dition of the market merely as temporary, caused by the poor demand for paper, and rather than reduce prices are said to be restricting their output, with the result that there is no great amount of surplus pulp now in the market. Domestic bleached sulphite is quotable at around 6.00c per pound at the pulp mill, No. 1 easy bleaching at 4.25c to 4.50c, newsprint sulphite at 3.50c to 3.75c and domestic kraft fibre at 4.50c to 4.75c. Screenings have been in somewhat better call and sales of the refined product at 1.75c to 2.00c a pound f.o.b. pulp mill have been recorded.

Rags. The rag market has been devoid of important activity. Paper manufacturers are buying merely on a hand to mouth scale, and values on some descriptions of material have eased off. Roofing rags are quotably lower. Quite a number of felt mills have retired as buyers, and dealers, in their anxiety to get orders, have cut prices somewhat, though it can be said that not a

few packers of roofing stock are holding for much higher figures than can be obtained at present and are imbued with confidence that in time they will secure the prices desired. Inquiry for thirds and blues have been moderate, and sales have been noted of thirds of a repacked variety at 3.35c a pound f.o.b. New York, and of miscellaneous packing at close to 3.00c New York. Whites are quiet, but steady, at a price range of 6.00 to 6.25c f.o.b. for No. 1 repacked and 5.00 to 5.25c for No. 2 repacked. New rags are sought by mills only in limited quantities and prices are mainly nominal. Consumers offer about 11,000 delivered mills for No. 1 white shirt cuttings, but holders as a rule decline to sell at this price. Roofing is quotable at a basis of between 2.15 and 2.25c New York for No. 1 packing.

Old Papers. Easiness in the low grades has been the feature of the waste paper market. Board mills were, at the outset of the week, in the market merely for small

FOR SALE

BEATERS.

Eleven E. D. Jones & Sons Co. new wood tub beaters with rolls 64 x 48". Tub made of 3" Cypress 4" bottoms. Iron rub plates iron back falls, metal hoods, emptying and washout valves, equipped with washers with their drive.

Eight Downingtown used wood tub beaters with rolls 60 x 48". Tub made of 3" Cypress, iron rub plates, iron back falls, emptying and washout valves, water hydrants and equipped with washers with their drive.

Six E. D. Jones used wood tub with rolls 48 x 48" made of 3" Cypress, iron rub plates, iron back falls, wood hoods, emptying and washout valves, complete with washers with their drive.

Six Downingtown Miller patent duplex beaters with rolls 48 x 48 complete with washers.

JORDENS.

One forty ton Emerson Fly, Noble & Wood Monarch Jr. Jordens.

SCREENS.

Two ten plate Packard open side with plates. Three twelve plate Downingtown with plates.

PUMPS.

Ten No. 8 centrifugal stock pumps. Two 6 x 8" 60 lbs triplex water pumps fig. 1009.

BEATER BARS AND BED PLATES.

Twenty tons of 48" x 6" fly bars. Fifty 48" bed plates with 6" bars.

KNEELAND MACHINE COMPANY
ROCHESTER, - - - N.Y.

Sale of Pulpwood Lands in Northern Ontario.

The Lake Superior Corporation and Algoma Eastern Railway Company are open to negotiate for the disposal of certain lands.

Approximately 682,000 Acres

Situated for the most part in that section of Northern Ontario known as the Clay Belt, and comprising the Townships of Storey, Langemark, Dowsley, Nassau, Shetland, Staunton, Orkney, Magladery, Caithness, Rykert, Doherty, Whigham, Coppell, Newton, Dale, McOwen, Frater.

The lands in question are accessible to the Algoma Central, Transcontinental, Canadian Northern, and Canadian Pacific Railways, and should be of particular interest to pulp and paper makers, also to settlers, in view of their agricultural possibilities.

General information will be furnished and plans exhibited at the office of Mr. Alex. Taylor, secretary of the Lake Superior Corporation, 142 Bank of Hamilton Building, Toronto, or at the office of Mr. G. A. Montgomery, vice-president of the Algoma Eastern Railway Company, Sault Ste. Marie, Ont.

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tonnages of stock and subsequently dealers in their eagerness to secure orders, repeatedly lowered prices in an effort to induce manufacturers to buy in heavier volume. The result has been a steady downtrend in quotations on such kinds of paper as No. 1 mixed, newspapers and container manilas. Folded news has been offered to mills at 70c a hundred pounds f.o.b. New York, while No. 1 mixed paper has been freely available at 50c per hundred and No. 1 container manilas at 60c to 65c. Shavings are notably steady, but in little demand. Hard white shavings of No. 1 quality are available in the local market at 5.50c a pound f.o.b. and No. 1 soft white at 4.60c. Books and magazines are selling to manufacturers at around 1.50c New York, and No. 1 kraft paper at 3.10c to 3.50c.

Bagging and Rope.—The market for scrap bagging and old ropes is characterized by dullness. Current buying by consumers is confined to small quantities, and there are few orders being received by dealers even for restricted amounts. No. 1 old domestic manila rope is available to manufacturers at about 5.00c a pound f.o.b. New York, while No. 1 scrap bagging is quoted at 3.00c New York and roofing bagging at between 1.80c and 1.90c.

BIG JUMP IN PAPER EXPORTS.

Trade returns for November—the first to be affected by the cessation of war—show a jump of \$1,958,845 in the value of Canadian pulp and paper exports as compared with November, 1917. Of this amount \$1,325,999 is accounted for by increased export of chemically-prepared pulp. Trans-Pacific trade shows a con-

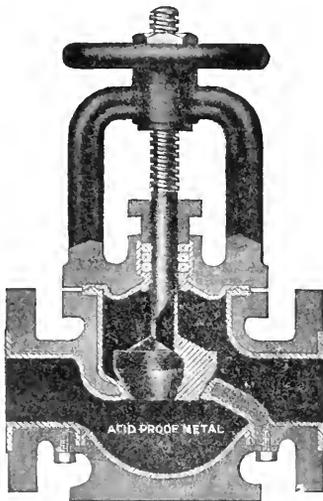
siderable increase. Australia and New Zealand together taking 65,677 tons of printing paper, valued at \$236,131, and Japan taking 64,594 tons of chemical pulp valued at \$275,050. As cargo space becomes more available exports to these countries should show a considerable increase. The total value of the month's exports was \$8,166,166, made up as follows:

	1917.	1918.
Month of November.		
Paper and mfgs. of	\$3,227,242	\$3,956,992
Chemical pulp	1,617,295	2,943,294
Mechanical pulp	512,221	399,851
	<hr/>	<hr/>
	\$5,356,758	\$7,300,137
Pulpwood	850,863	866,329
	<hr/>	<hr/>
	\$6,207,621	\$8,166,466

For the first eight months of the current fiscal year the total value of pulp and paper exports, including unmanufactured wood, amounted to \$65,411,601 as against \$48,578,974 for the corresponding period in 1917, an increase of \$16,832,627. Details for the eight months' period follow:

	1916.	1917.	1918.
Eight months.			
Paper and mfgs. of \$15,526,242	\$24,140,074	\$29,495,873	
Chemical pulp	8,384,840	13,072,335	21,760,738
Mechanical pulp	4,164,567	5,036,802	3,308,126
	<hr/>	<hr/>	<hr/>
	\$28,075,650	\$42,249,211	\$54,564,737
Pulpwood	5,067,826	6,329,763	10,846,864
	<hr/>	<hr/>	<hr/>
	\$33,143,476	\$48,578,974	\$65,411,601

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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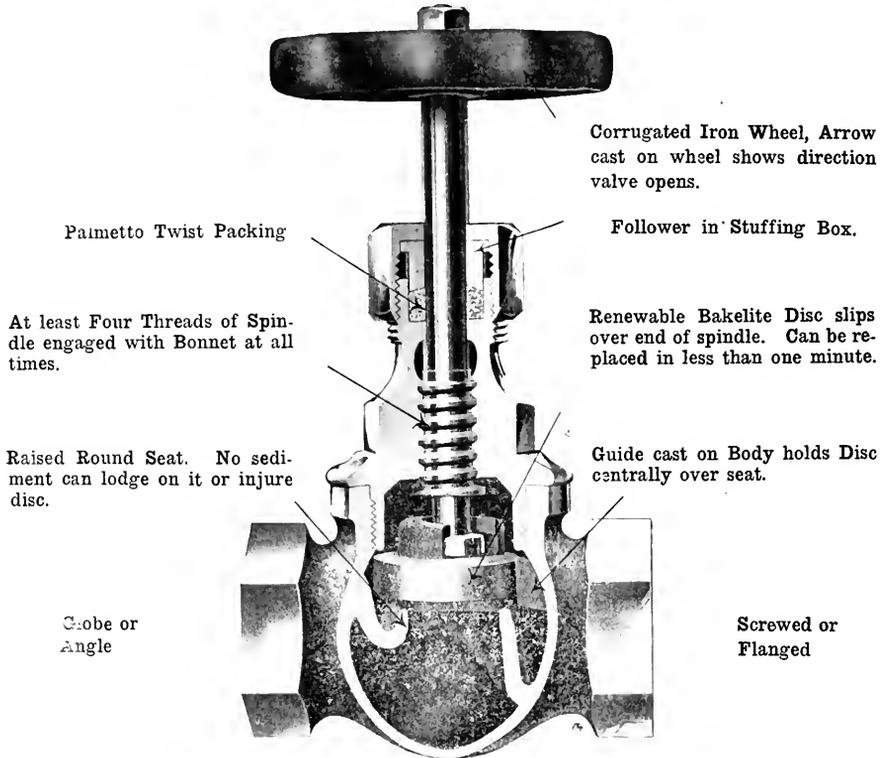
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EDITORIAL

COMMENT ON THE CONVENTIONS.

The last two weeks have been busy and interesting ones for the pulp and paper makers of Canada and the United States.

On January 30th and 31st members of the Canadian Pulp & Paper Association, in meetings of the association as a whole, and in the smaller but no less important meetings of the various sections, have considered items of greatest significance to the industry of Canada, both now and in the future. The importance of such meetings cannot be over-emphasized and the large attendance indicates the attitude of the Canadian pulp and paper manufacturers to the great annual gathering.

The importance of the topics discussed strongly emphasizes the value of such a clearing house for ideas on topics which are really national in their scope. It is a pity that the association does not embrace every pulp and paper manufacturer in the Dominion. There are still a number, fortunately small, who do not realize the advantages of membership and the opportunities for national service which result from participation in the activities of the various sections of the Canadian Pulp and Paper Association.

The only reasons for the existence of such an organization are the advantages to the members and the service that can be rendered the community, and, of the two, the latter is by far the more important. Problems such as the re-establishment of returned soldiers, the conservation of forests, the proper utilization of water powers, the development and use of many Canadian resources, such as coal, clay, limestone, grindstones, etc., and even problems involving transportation, land settlement, and immigration are typical of the matters that can properly be discussed with profit at such gatherings. The broad-minded attitude and the deep-seated interest of members of the Association is proved by the long distances that members will come to discuss these topics and others which are restricted more to the industry itself.

The attendance at meetings of the Technical Section was particularly gratifying and the addresses were more fully discussed than at any previous meeting. This indicates either that the subjects were of greater interest than usual or that members are coming to a realization of the advantage of fully discussing the subjects presented, and, appreciating the benefit to themselves of hearing the ideas of others, realize that the expression of those ideas and experiences can

only be expected when they are willing to contribute their own share to the discussion. It is to be hoped that attendance at the meetings of the Technical and other Sections of the association will be as well maintained in the future as was the case this year. In fact, with the gradual but healthy growth in membership we may expect the meetings to become even more interesting and better attended. The principal thing to be remembered from the meeting just held is the advantage of having ideas and being willing to express them at the meetings.

In New York the American Paper & Pulp Association, last week, held the biggest convention in the 42 years of its history. It is possible at this time to mention only a few of the more important features. Among a large number of excellent addresses there stands out particularly the note of enthusiastic patriotism and desire for service which permeated the whole atmosphere of the gathering. One of the most inspiring memories of the occasion was the remark of Judge Moore, at the dinner of the Technical Association, when he said: "The President of the United States is my President no matter what party he may belong to." We in Canada can take a lesson from the Judge's remarks and resolve that once a Government is elected that this is the Government of the whole people and it is the business of each one of us to stand firmly for the elected representatives of the Dominion and eliminate misdirected, destructive criticism.

Along technical lines there was an inspiring note in the remarks of Dr. Steinmetz, when he indicated the lack of appreciation among cellulose investigators of the large possibilities for utilizing the non-cellulose materials removed from the wood in the manufacture of pulp. He drew attention to the fact that in making coke from coal, the coke corresponds to the cellulose recovered in pulp-making and that the non-cellulose portion of the coal is the basis for the largest chemical industry that we have, while the non-cellulose part of the wood, which is almost entirely wasted in pulp-making can be made a basis of correspondingly profitable industries. The difficulty seems to have been that investigators have seen only one line of attack and have limited their researches to the possible development of a single product, whereas the possibilities should be viewed in the light of their full extent.

The large number of members and affiliated associations of the American Paper and Pulp Association

necessarily makes the annual gathering in New York a much more extensive proposition than the meeting of the Canadian Association, but sectional meetings make it convenient for men in the same line to get together more intimately and discuss their many problems. Much constructive work was done at the meeting this year and it is expected by the Association that fuller co-operation will be possible in the future and even more good accomplished by the organization. It is particularly important at this critical time in the history of our peoples that organizations of this kind are ready and willing to undertake the solution of problems that mean so much to the welfare of our own people and even the world at large. It can be confidently expected that the good work of the association will continue through the coming years and that the Association will attain even greater strength and importance.

It is worthy of note that after many years of resolution-passing intended to encourage the better education, particularly on technical lines, of those engaged in or likely to enter the industry, work has begun on the actual raising of real money for this purpose. Inspired by the vision of George Carruthers, the committee on education of the Canadian Technical Section, finding their program for promoting vocational education blocked by the lack of suitable text-books, set to work on this most important phase of the problem of education. After going carefully over the ground and mapping out a course of action, the committee got in touch with a similar committee of the American Technical Association. The result was a joint meeting and the formation of an executive committee representing the Canadian and American Associations and charged with finding a solution of the problem. Under this committee's direction an outline for a suitable textbook was prepared. The Technical Section approved the plan and the Canadian Pulp and Paper Association promptly voted an appropriation of \$5,000 for this year and the assurance of \$5,000 next year. The Technical Association in New York likewise approved the plan and the American Paper and Pulp Association, following a strong argument from President Sisson, authorized the canvass of members for the \$20,000 needed to complete the sum of \$30,000 estimated as necessary for carrying out the program of the committee. The action of the American Paper and Pulp Association does not seem as spontaneous as the Canadian, due in large measure to differences in organization. The spirit, however, is the same and the financial support of the movement seems assured. It is to be hoped that every mill will not only subscribe to the fund, but continue to push the improvement of educational opportunities for each and every person in the industry who has a spark of ambition. A fine start has been made. Let's keep the ball a-rolling.

PAPER MEN LEAD THE WAY.

Our earnest hope is that it won't be long before the textile manufacturers in Canada follow the example set by the Canadian Pulp and Paper Association in the matter of taking a greater interest in the education of their workmen. The committee on education by the Pulp and Paper Association recommended to the annual meeting of the association that text-books be secured and distributed free of cost among the men at the different mills throughout the country, giving practical lessons on the manufacture of pulp. It was also suggested that night schools be established in mill towns whereby these men would be given an opportunity of learning the technical end of the business.

If a similar programme could be carried through to a successful conclusion by the textile manufacturers, it would undoubtedly give an impetus to the industry and act as a tonic to the business. These night classes for technical training, we feel sure, would be the forerunners of textile training schools established with the assistance of Federal and Provincial Governments. —From Canadian Textile Journal.

A souvenir of the annual meeting of the Quebec Forest Protective Association, when opened up once, shows "The Careless Smoker" throwing a lighted cigar butt and a lighted match where they start fires in the woods. Opening the folder again shows two more views of the culprit. We first see what he will get here—kicked out of the injured community; and what he will get hereafter—when the Devil with a long-handled frying-pan gives him the "special treatment for fools whose carelessness caused forest fires." In other words, the Devil is giving him Hell, which he doubtless deserves.

MAKING LIFE SWEETER.

Today, just as it was yesterday, we are assailing the motive and conduct of men, holding them up to ridicule and reproach, upon the announcement of whose death we shall take occasion to commend them, when their ears are deaf to our approval. Would it not be infinitely better to discount our praise and anticipate its payment? One little flower sincerely tendered a living man will help him more than a magnificent wreath laid upon his grave; one word of praise spoken to him while he hears may do more good than an eloquent obituary. If you are not inclined to believe it, try it out on somebody. It might be well to make the experiment with one of your business competitors. —Editorial in Paper.

A HANDSOME SOUVENIR.

One of the finest souvenirs we have received in a long while is that recently sent out by M. Gottesman & Company, New York, dealers in wood pulp. It is a memorandum pad to be clamped to a desk telephone, and at the top has the name of the firm and a calendar which is perpetual by virtue of four disks showing the day, month and date. It is an exceedingly neat and useful gift.

The Determination of Loss of Steam from Dryers

B. M. BAXTER, Consulting Engineer, Cleveland, O.

Many paper machines are now equipped with traps, either individual traps on each dryer or larger traps each serving a number of dryers, in order to prevent the loss of steam from the dryers through blowing out with the condensation. However, there are still many machines not so fitted. In order to determine the amount of such loss with a view to determining how much saving can be made in this direction, the following method devised by the author several years ago can be used with little expense.

The apparatus is simple and consists of a small cold water meter, a low reading steam gauge, preferably a compound gauge, three thermometers, preferably calibrated laboratory type thermometers, which can be purchased for about \$1.50 each, platform scales and some pipe and fittings.

As shown on Fig. 1, a connection is made in the machine return line receiving the condensation from the dryers and if there is none, a gate valve is inserted in the line beyond the connection for testing, so that it may be shut off and the condensation diverted through the testing connection. In a tee in the test piping, a thermometer well is screwed. Below this well a cold water connection is made and the meter inserted in this cold water line with a globe valve for regulation of the flow. There should preferably be two weighing tanks on platform scales although any arrangement for accurate weighing or measuring of the water is all that is needed. If two tanks are used, the test piping should terminate in a freely swinging arm or should be branched with a valve in each branch with the discharge arranged to fill the tanks alternately.

The pressure gauge is attached to the main return line between the machine and the testing apparatus so that the pressure on the return main can be kept at the same point during the test as during regular operation. This is done by throttling the valve in the piping to the testing tanks.

Before beginning the test the cold water meter must be tested for accuracy by running water through it and weighing the water in the testing tanks. Several such runs should be made, and the results plotted on squared paper, to make a calibration diagram similar to Fig. 2

2 from which the true amount of cold water used can conveniently be read from the readings of the meter taken during the test.

One of the thermometers is inserted in the test piping above the cold water connection to show the temperature of the mixture of steam and water coming from the dryers. A second thermometer is inserted in the cold water supply line and the third thermometer used to determine the temperature of the water as weighed. If no thermometer wells are on hand, two must be prepared or made, as illustrated by Fig. 3.

The purpose of the cold water connection is to condense the steam in the return water from the machine and also to reduce the temperature of this water to a point where it can be conveniently handled. It is not material how much cold water is used nor what the temperature of the water weighed is, except that it is desirable to keep the rate of flow of cold water as nearly constant as possible which will maintain the temperature of the water weighed uniform and assist in obtaining accurate results.

The method of making the test is to close off the valve in the return main so as to divert the water through the test piping. The flow of cold water is adjusted so that the water flowing into the weighing tanks is as hot as can be handled comfortably and at the same time, the valve in the piping from the main to the tanks is adjusted to show the same pressure as when the machine condensation was flowing through the main.

When conditions are uniform, the test and weighing of water is begun. Readings of all three thermometers and the water meter are taken at regular intervals of ten or fifteen minutes and the weight of water collected in the weighing tanks as the tanks fill. It is not necessary to read the pressure gauge for record, but merely to keep watch of it and to adjust the flow from the machine from time to time so as to keep the pressure uniform. It is preferable to continue the readings for several hours so as to get better average readings and to take care of "slugs" of water which sometimes are discharged from the dryers.

As additional data of interest, the speed and trim of the machine should be noted and the weight of paper made so that the total weight made during the run can be calculated and the weight of steam per pound of paper dried determined.

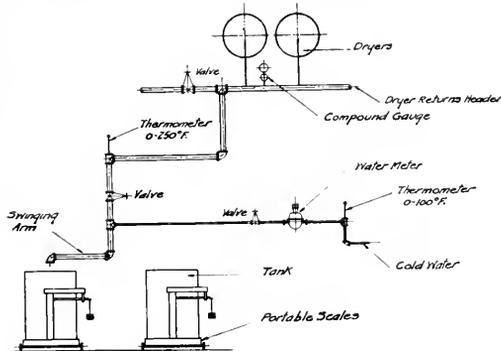


Fig. 1.

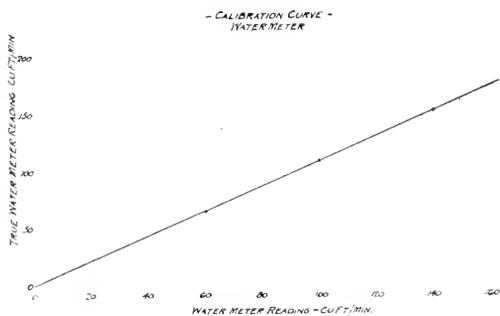


Fig. 2.

After the conclusion of the test, the thermometer readings are averaged and the total amount of cold water determined by subtraction of the reading of the water meter at the beginning of the run from that at the end. If the meter reads in cubic feet, the reading is to be converted into pounds by multiplication by 62.4. In case the meter does not read correctly, the true amount of water used is read from the correction diagram.

The method of calculation can best be illustrated by an example.

We will assume that the thermometer in the main line from the machine gave an average reading of 225 deg. Fahr., the temperature of the cold water 60 deg. Fahr., and the temperature of the water in the weighing tanks 180 deg. Also, that the water rate shown by the meter after correction by the calibration diagram was 125 cubic feet per hour. The equivalent weight is then 7,800 lbs. per hour. The weight of the water weighed in the tanks will be assumed to have been 12,300 lbs. per hour.

The heat absorbed by the cold water in heating from 60 deg. to 180 deg. is 120 B.T.U. per pound. The heat given up by the water in the mixture of steam and water discharged from the dryers in dropping from 225 deg. to 180 deg. is 45 B.T.U. per pound. By reference

tained in one pound of the mixture of steam and water from the dryers. Then 1-S will be the fraction of a pound of water in the mixture. As the steam gives up 1007 heat units per pound and the water 45 heat units, the heat in one pound of the mixture will be 1007 times the fractional part which is steam and 45 times the fractional part which is water. As we have already determined that the total heat in one pound of the mixture is 208 B.T.U. heat units, we can now write an equation from which the proportion of steam and water can be found. This equation is as follows:

$$1007S + 45(1-S) = 208$$

Transposing this equation:

$$1007S - 45S = 208 - 45, \text{ or,} \\ 962S = 163,$$

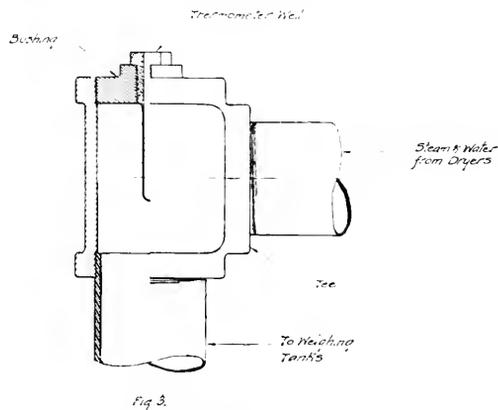
The proportion of steam in the mixture is then, 163/962 or in decimals 0.169, practically 17 per cent.

Assume that during the period of above test, the machine made 1380 lbs. paper. Then the amount of steam used per pound paper will be 4500 divided by 1380 or 3.26 pounds per pound of paper made. As the test shows a loss of 17 per cent, the amount of lost steam per pound of paper will be 0.55 lbs. and the steam required for drying without loss would be 2.71 lbs.

Since the preceding figures were assumed to be the average hourly results, the loss per hour would be 4500 multiplied by 0.17 or 765 lbs. The equivalent loss in coal may readily be figured. As a fair value, 8.5 pounds steam may be assumed to be produced per pound of coal. The fuel loss would then be 90 lbs. per hour or at the rate of 2160 lbs. per 24-hour day. With some allowance for steam being off the dryers for washing up, changing felts or other reasons, this loss may be figured at a ton per day (short ton) or roughly—300 tons per year, representing a loss of \$1,500.00 per year for an assumed coal cost of \$5.00 per ton delivered at the boilers.

In the preceding calculations, no account was taken of the fractional parts of heat units as given by the steam tables and for the sake of simplicity, the specific heat of water was taken at on heat unit per pound throughout the range of temperatures used. This is not absolutely accurate, but the error is so small that it has no appreciable effect on the result.

The above method takes no account of radiation from the piping between the dryers and the testing apparatus and as this radiation causes a condensation of the steam in the mixture, it is desirable to locate the testing apparatus as close to the dryers as possible. The error can largely be reduced if the piping is covered with pipe covering from the dryers to the testing connections. If very accurate results are wanted, all the piping from the dryers to the testing apparatus can be measured, the square feet of pipe surface computed, the temperature of the surrounding air taken and the heat loss calculated on a basis of 3 B.T.U. heat loss per square foot of bare pipe per hour for each degree difference in temperature between the surrounding air and the mixture of steam and water in the pipe. The latter temperature will be approximately constant at all points in the pipe until all steam is condensed. After this heat loss is calculated, the figure for total B.T.U. radiated may be divided by the total heat per pound of steam above the temperature in the return main and the result will be the number of pounds of steam condensed due to radiation and a suitable correction can be made to the result obtained by test of the amount of uncondensed steam discharged from the dryers.



to a table of the properties of saturated steam, we find that for steam at 225 deg. the total heat above 32 deg. is 1155 B.T.U. and the heat given up to the mixture of returns and cold water, 1155 - 148 = 1007 B.T.U. The figure 148 is the heat above 32 deg. of the water as weighed.

Since the heat given up by the mixture of water and steam is the heat taken up by the cold water, the total heat per hour given up by water and steam from the dryers is $120 \times 7,800 = 936,000$ B.T.U. per hour. By subtraction of the weight per hour of cold water used from the total weight, the weight of steam and water from the dryers is found to be 4,500 lbs. per hour.

Hence the heat per pound given up by the mixture of steam and water from the dryers will be 936,000 divided by 4,500 or 208 B.T.U. As the water part only gives up 45 B.T.U. per pound in dropping from 225 deg. to 180 deg., it is evident that steam is contained in the mixture. The problem then is to determine what fraction of a pound of steam containing 1007 B.T.U. when mixed with water containing 45 B.T.U. will result in a mixture containing 208 B.T.U.

Let S represent the fraction of a pound of steam con-

Bright Bits from the Banquet

(Continued from last Issue.)

A Little Scotch

By GEORGE CARRUTHERS.

This is a most unusual introduction and a most unusual way of proposing a toast to the Guests.

There is a story told of a couple of Scotch sailors, old fellows, who grew tired of the sea and they decided to remain ashore, and if possible buy some little business. They watched the papers very closely and finally they noticed an advertisement of an Inn for sale, and Dougal said to Donald, "I think that would be a good thing for us." So they went and interviewed the proprietor, who seemed quite willing to sell to the sailors. They then consulted a lawyer to prepare and have the papers transferred.

As soon as the proprietor discovered that it was possible for him to sell this Inn, he closed the door, and as is customary in small places, the people immediately supplied the explanation as to why this door was closed. It was to the effect that the Inn would be closed for four days until the transfer was completed, and then it would be opened up under the new management.

It was a long time to wait the four days, and on the fourth morning they were all there waiting for the opening of the Inn, but the door was not opened. One bold fellow walked up to the door and shook it and gave it a kick. He heard a little commotion inside, but the door was not opened. He then picked up a handful of gravel and threw it at the door or over the transom. There was a little more commotion, and then a big, shaggy, brawny Scotchman looked over the transom and said, "What do you want?" He was asked, "When will the Inn be open?" The Scotchman looked at him for a minute, and said, "The Inn will not be open; we are going to keep it all for ourselves."

I heard of another Scotchman who was trying very hard to get down to the station so that he might depart. He navigated fairly successfully a portion of the way, but finally he swung around and grabbed the wire which was running alongside the sidewalk. He waited there a while, and a gentleman came along, and Sandy said, "I say, my man, come over here." "Why?" "I want to speak to you. I am in an awful fix; if I let go this wire I will fall down, and if I hang on to it, I will not get my train."

Mr. Carruthers then asked the gentlemen present to fill their glasses and drink to the toast of "Our Guests," which was responded to by Mr. George W. Sisson, Jr., of Potsdam, New York, President of the American Pulp and Paper Association, and Captain Dudley Field Malone, Collector of the Port of New York.

Canadian-American Entente

By GEORGE W. SISSON, Jr., President of the American Paper & Pulp Association.

I thank you for the cordial expression of good will and welcome which you have given your guests.

Speaking for myself, and I am sure also for all

who are enjoying this same hospitality with me, we deem it a distinguished honor to be the guests of the Official Representatives of one of the great industries of a great nation; an industry whose rapid expansion in your country would seem a fairy tale or the result of the rubbing of Aladdin's lamp, were we not fully aware and thoroughly appreciative of the character of the men who think and act and lead in the wonderful development of your country. What a people you are and what an Empire is yours! I would that I might live for fifty years more just to see what wonders are in store for this nation of yours. Great as has been your development, since the day when only the hardy voyageur and no less



GEO. CARRUTHERS.

adventurous "Courier de Bois" carried the spirit of discovery into the then almost unknown wilderness, I venture to assert that the possibilities of this nation and country have been, from an agricultural, industrial and social standpoint, but dimly visualized by even your most optimistic citizens.

I believe that I know something of the spirit and enterprise of the Canadian people, for I have lived all my life practically within sight of the noble waterway which seemed designed by nature for our natural and peaceful boundary, and upon whose broad bosom could be carried in fair and joint co-operation, the products of both Empires on their way to the world's markets.

Small men can operate mills and successfully handle their individual enterprises, but it takes big men with broad vision and something of altruism in their souls to build an Empire, an Empire based not merely on commercial supremacy, but which finds its firm foundation in the character and contentment of its people.

You are no mere exploiters of a nation's resources, though men in this industry have often been so characterized. The spirit and motive in which you have

pursued and do pursue this work of opening up your country, developing its resources, establishing here and there hamlets of busy workers who under your fair management become a contented and useful addition to the strength of the Dominion, decide your true place in the upbuilding of this nation. You need not fear the carping criticism of those whose temporary interests incline them to attack you, for your place in this great work will be fairly judged in the future without regard to such passing comment.

I, of course, appreciate the fact that I am here as your guest, because I represent in the United States the great industry in which you are also engaged. In the name of the American Paper and Pulp Industry, I thank you for the expression of good will and recognition of mutual interests that your invitation implies. I bring you the greetings of the manufacturers on our side of the line, whose problems are largely identical with yours and in the solution of which there should be no elating of interest through misapprehension. Co-operation on a large and magnanimous scale, and in the most sympathetic spirit must be the rule, if the industry is to prosper in both countries. You need our markets; indeed, must have them, and we have gladly opened them to you. Common fairness indicates that you should not deny to us access to your raw materials that may be needed and a restrictive policy which goes beyond more than fairly protecting your national requirements would not be in accord with the co-operative spirit that must hereafter rule international relations.

It will, gentlemen, continue through all generations to be a subject of legitimate pride for Canadians that in the crisis of the world's history and destiny they had no ends to serve at the promptings of national selfishness, but threw themselves into the struggle for world-safety with an abandon and complete devotion, never surpassed in any country.

The material benefits which the war has brought to your nation have not been earned by any methods of which you should be ashamed. The access of spiritual elevation and moral force which the war has brought to this people will probably be reckoned in years to come as the real gain that is its share of the Victory.

I thank God that into that great struggle America finally entered, and not quite too late.

This war has somehow brought you Canadians and ourselves closer together than ever before. No American soldier has come in contact with the Canadian troops in this war without feeling that his heart was warming towards them. Of your troops, no inconsiderable portion were citizens of the United States. For this reason, and perhaps for others, the Canadian soldier has conceived a deep and sincere feeling of brotherhood for America.

You Canadians are loyal Britishers, and near Americans, citizens of Britain with the American temperament.

It is an inestimable privilege that you and we have in our hands the working out of the wonderful future of this North American continent. May we do it in that spirit of complete devotion, helpful co-operation and unselfish service that will make for the happiness and genuine contentment of the splendid race of men that will people these sister Empires.

New Era in Industrial Relations

By CAPTAIN DUDLEY FIELD MALONE, Collector of the Port of New York.

I must say that this is the most long-distance audience I have ever spoken to, and it was well worth while to come thirteen hours to Montreal and to return thirteen hours to-morrow morning to hear Lieutenant Gitz Rice and his brother sing "Canada, my Canada," and to hear Mr. Steele sing that never-to-be-forgotten melody, and to hear General White's speech so modestly describing the efforts and successes of the Canadian soldiers, and to hear the ripe wisdom as to the future of the relations between Canada and the United States from the statesman-like lips of Sir John Willison. So it was not necessary, gentlemen, that I should come here to make a speech in order to be happy.

Now, gentlemen, the chief reason, as I have viewed it, why Canadians sometimes said, "Oh, Hell, what could you expect? He is an American," or why an American said, "Oh, Hell, he is a Canadian," was simply because of that handed-down prejudice from the lying lips of misrepresentation. You look like Americans to me. I don't see any difference. You all look like white men.

You know there are still some Irishmen who think that an Englishman has no sense of humor and there are still some Englishmen who think that an Irishman has a strange sense of humor. I heard a story the other day about an English General who was given temporary command in France of an American Brigade for the purpose of instruction and leadership. This General was one of the older British officers, a brilliant tactician and a fine fellow, wearing that fine British crust and veneer which you have to understand to appreciate, and in his eye he always wore a monocle, to keep from catching cold. These "rough necks" from the States did not understand these eccentricities, and they did not like to be led by a man wearing a monocle, and planned all sorts of ways to show their dissatisfaction.

One morning, when the General came up, four regiments of men had each stuck their brass identification tag in his eye. The old General stepped out to review the Brigade, and he walked quietly along with his crop, looked into every man's face. He then strolled out leisurely to the centre of the drill field, faced about in true soldierly fashion, still with his monocle. He took his crop in his left hand, put his right hand even with his stomach, released his eyelid, dropped his monocle into his right hand, and with his thumb flicked it back into his eye, and then he said, "Do that, you beggars, if you can."

But, gentlemen, this is an important period for you and for us across the border. It is a period in which there is profound obligation to those of you who represent this great industry, and your industry will not be safe if you are not shot through with vision; if you do not realize the times in which you live. A soldier came back to the port of New York four weeks ago, and was wandering around the streets of New York for nearly a month looking for a job, and in the midst of cynicism, as he heard that the German working people had gotten control of their own government this man, with cynicism, said, "Well, we

won the victory, but the Germans seem to have won the freedom," because this battle was not fought for political freedom alone, it was fought also for industrial freedom, for honest wealth, and for honest labor. This is an accommodation that has been spoken to you all night long by your fellow members; it is an accommodation that must be made. Gentlemen, you cannot always increase the wages; you cannot always decrease the hours; there finally must come a deadline beyond which labor and capital cannot go. What will you do then? You will do nothing unless you plan for the future.

I went into a great shoe factory in Manchester, N.H., about six weeks ago, a factory that employs seven thousand men, women and young girls. I went through that factory for a day with great interest, and with great education to myself, and in that factory, where every machine was placed in the light so that the conditions were sanitary, they had a dance hall for the young people, gymnasias for the young men, baseball and football for their employees, every humanitarian device that the genius of modern efficiency could conceive, and at the end of the day the head of the concern said: "What do you think?" I said, "It is the most wonderful plant I have ever been in." And he said, "And yet labor is not content. How can you explain it?" I said, "Mr. Shaw, I don't know that I can explain it, but I have a theory. If you have seven thousand employees with forty different processes for the making of shoes, with each working man and each working woman making a particular small piece of leather or handling a small strip of eyelets, and doing that for six or seven or eight hours a day, no matter how handsome your condition, it is not natural to believe that humans can work for that time on a stereotyped job of that character without any creative impulse in their souls, and be satisfied. You have got to develop a creative impulse in the workers of Canada and the United States.

It can be done in this simple way. It is simple to state; it is more difficult to achieve, but it can be done in the respect that you should not plan for the future in order to increase the profits on labor, but you should plan for the future in order that the working man and the working woman may be taken and trained by you and your conferees to take an interest in the plant, not in the profits, but in the production of the goods, because, my fellow-citizens of Canada and the United States, you go to your shops and factories, and you work from early morning to late at night because you have the spirit of adventure. You handle the details, you have the executive skill; the individual worker has not the participation in the enterprise or in the production of the goods, which is the very soul of the wealth which you shall produce.

Abroad, what is happening? Gentlemen, someone said the Kaiser began the war. The Kaiser did not begin the war; the Kaiser began a world-wide revolution. It is all over the world to-day, but the thoughtful men of Canada and the thoughtful men of the United States can meet it if they will meet it. How? By planning with vision; by planning with patriotism; by planning with the sympathy which you have evidenced in your comments to-night; and by planning with the spirit of the immortal dead of Canada, those men who died on Flanders Field, those men who lie on hillside and in valley; those men

whose crosses kiss the breath of heaven with the coming spring, immortal in the history of mankind. They died for a new day; for a new order; they died for a new world compact; they died for a permanent compact and a permanent peace; they died for a real industrial system in which honest men and honest wealth should earn honest profits, but in which the mass of the people should be taught to participate, not in the exploitation, but in the production of wealth.

These are the things for which the men died, in order that men might be politically and industrially free, and in the proportion that Canada avails herself out of the death of her sons, out of the shattered bodies of those who return, out of the services of her women, as long as we realize in the tragedy that we have gone through, the lessons of this great war—in that proportion the future is safe, but it will only be safe by the planning of the men of brains of your nation and mine, and that planning may know no boundary line, may be destroyed by no prejudice and may make not only for the development of this country but for the practical obligations, of world wide ideals, and that should be the prayer of Canadians and the prayer of Americans, that men may not know whether they are Canadians or Americans, but that they shall know, in the spirit of those who have gone forth with a smile on their young faces, to die, that an all-wise Providence may have planned this awful tragedy that a better world, rising from the ruins and ashes of the past, shall contemplate a future which we have scarcely the energy to plan.

The Silent Toast

By HENRY A. WISE, New York.

Gentlemen, Sir John Willison, in his remarks to you, made a statement that struck deep into my heart when he said that this country looked with tolerance and patience on the inaction of my country. You may have looked with tolerance and patience on the inaction of my country, but every white man in that country, like yourselves, did not look with tolerance and patience on its inactivity.

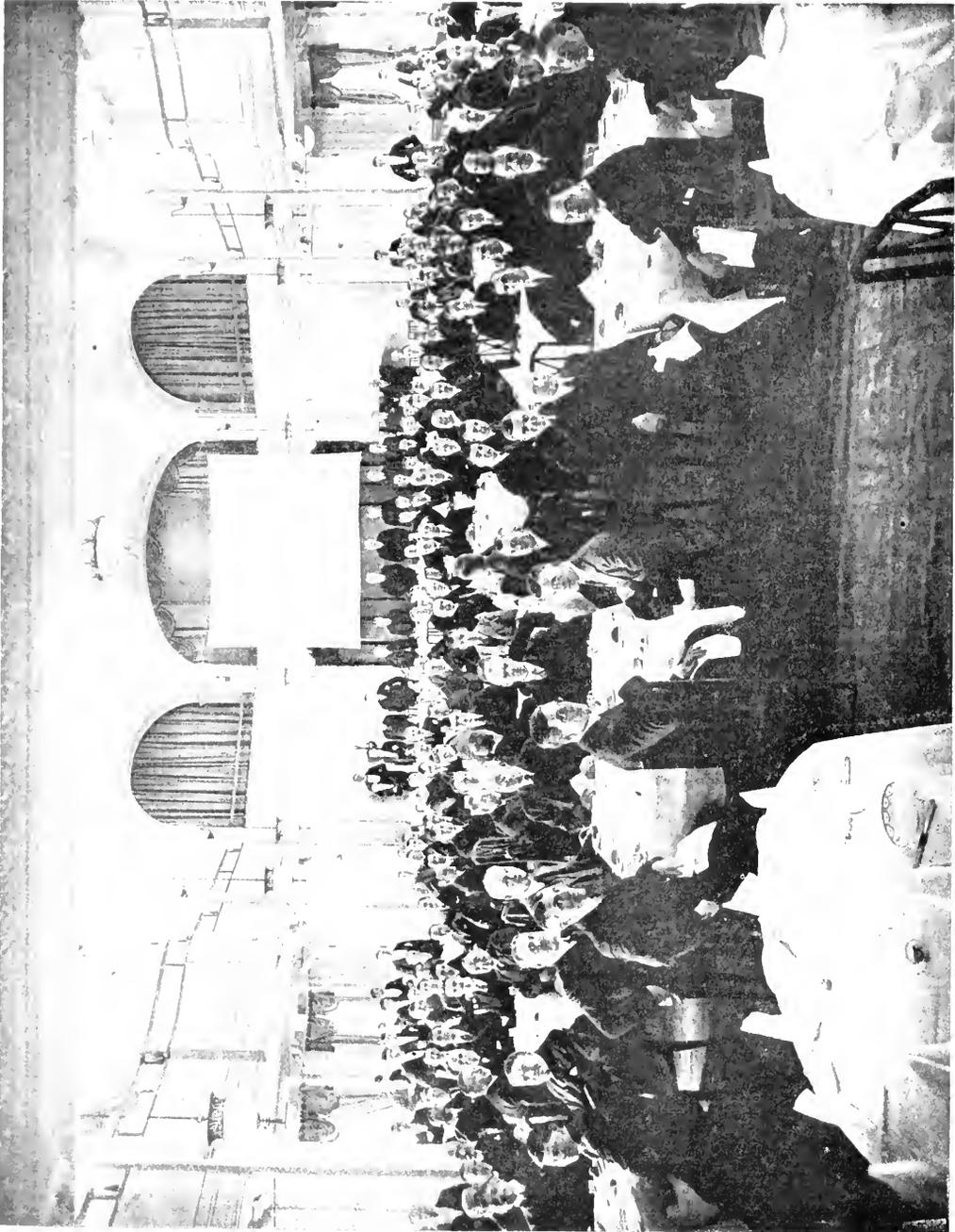
We chafed; we chafed under the inaction of our country. We bled with you as you bled while we stood idle. The men who sprung from the loins of the men from whom you sprung suffered as we sat idle.

I am speaking for the English people of the world; I am speaking for the people who need no league of nations, people who will rule the world, the English people, and the men who came from England, Ireland and Scotland and America, and who left their descendants there, as they came to Canada and left their descendants here, chafed under the inaction of our Nation and bled out of their hearts while you gave up your real blood on the Fields of Flanders.

I apologize for the men from whom I come for the delay of our country going into this war. The men who died there would not all have died had we gone in sooner, and I can only say that I wish to God we had been with you from the start, and that I consider that every man whose name is written on that list is a consecrated name which we below the line cherish as much as you.

I will toast them with you.

(THE SILENT TOAST.)



Lanchester of Canadian Pulp and Paper Association, Katz, Carlton Hotel, Montreal, January 31, 1919. Centre, standing, Dussac, A. Ray, with an American representative, W. Robinson, L. Dawe, E. Beck; on president's left, Capt. D. F. Malone, not recognized, Geo. Chubb, G. H. McKee, F. J. Campbell.

Making Work Attractive

By ROBERT B. WOLF, M.E.,
 Manager Spanish River Pulp and Paper Mills, Ltd.
 (Continued from page 101, Jan. 30.)

The "uniformity" record shown first in the three charts to the right of the page came as the result of suggestions from our men after the weight and moisture records had been in use for some time, and we purposely left other spaces in the progress records attached to the charts, for we knew that we would be sure to have requests from our men for other factors which they would like recorded. While we have not had time to work them out as yet, we have already had a number of suggestions. We find that the greater number of factors or laws that we record, the greater is the interest in the work, because it brings to bear upon the problem a greater amount of thought.

What Kind of Records Produce Greatest Effort.

The "basis weight" and "moisture test" records had been operating only a short time when the machine tenders called our attention to the fact that they could get better results if the stock thickness or density furnished them by the beater room was more uniform. They asked us to find a way to measure the thickness of the stock so that the beater engineer could do his work better.

As a result of this suggestion, and after discussing the matter with the beater engineer, our research department has tackled the problem of measuring this stock thickness and it is now practically solved. The beater engineer immediately suggested to us that the variation in the stock thickness which was furnished him by the sulphite pulp mill and groundwood pulp mill was not uniform, and that we should find some way of recording the thickness at these points.

We found that to do this we had to increase the amount of agitation in the pulp storage tanks, and as a result are making some radical improvements which will tend to produce greater uniformity throughout the entire process.

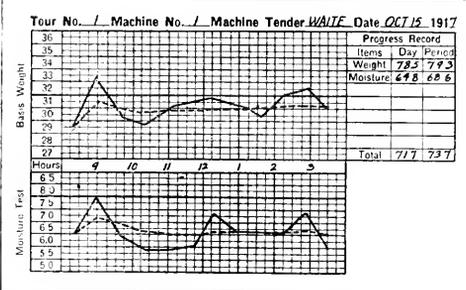
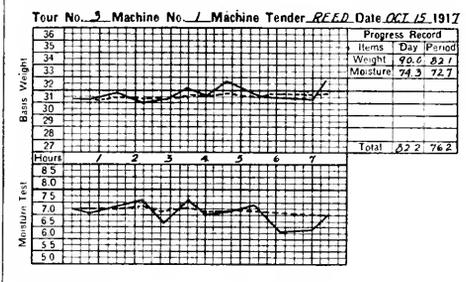
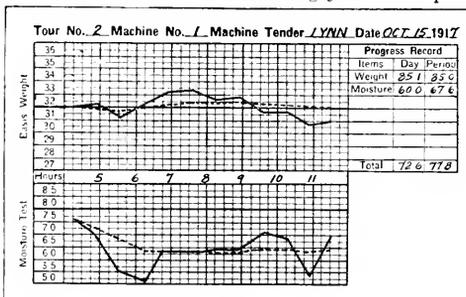
Right here it might do well to call attention to the fact that our experience has been that men do not have to be stimulated to make suggestions by offering prizes. They are glad to suggest improvements, for in this way they are helping to create conditions in the plant which help them to get better results (the results being indicated by their progress records). Then, too, they are sure to receive recognition for their suggestions, for the foreman knows our judgment of his ability depends largely upon how he succeeds in getting his men to use their brains. He naturally hastens to give credit for all suggestions made.

Of course, it goes without saying that this greater uniformity is bound to result not only in a better quality of paper, but in increased output as well; in fact one of our mills, without making any changes in the speed of the paper machines, has already increased its output over 5 per cent because of uniform operating conditions.

We have further made the discovery that what we call the slowness or freeness of the stock has quite a bearing on the quality of the paper as it comes off the paper machines, and as a result we adopted a method which would record this slowness and freeness. By free stock I mean stock that the water leaves rapidly and by slow stock a stock which the water leaves slowly. We found incidentally that this slow-

ness and freeness is one of the best indexes of the quality of the groundwood pulp, and we are now working upon a series of factors which will record the operations of the grinders upon which the wood blocks are reduced to pulp.

This work has always been one of the most uninteresting and monotonous jobs in the plant, but from the small amount of work we have already been able to do, we find increasing interest upon the part of the worker, and I feel free to prophesy that when these several factors have been recorded, we will convert this into one of the most interesting jobs in the plant.



MASTERS: MEN OR MACHINES?

Machine records like these used to be typical in a paper mill. When the tenders were kept informed of the variations in paper thickness and moisture, they suggested ways of improving the whole process. The results are shown on the next page

I base this prophecy on my previous experience in another plant where we recorded hundreds of operations. These records we found to be grouped under three general classes: quantity records, quality records and economy.

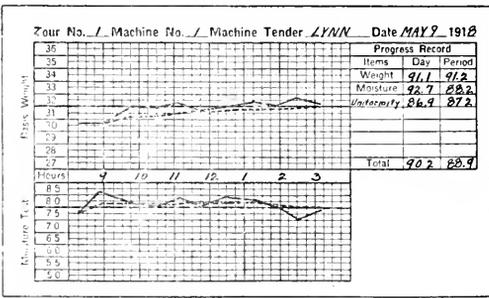
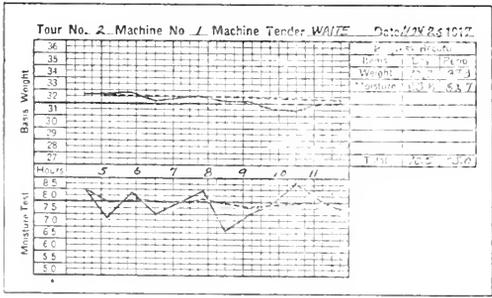
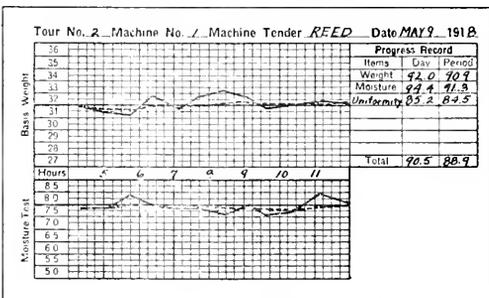
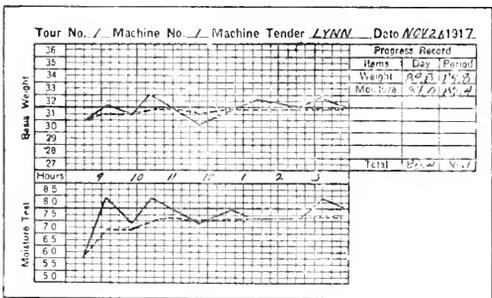
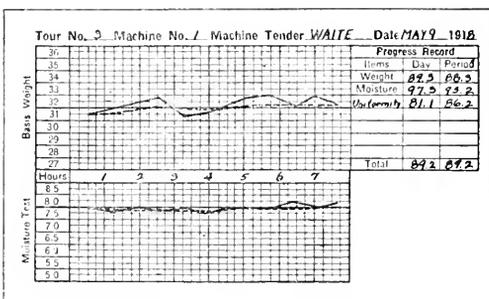
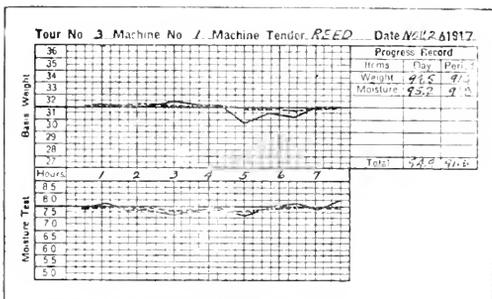
Quality records (which occupy the middle position), are, perhaps, of the greatest importance, for they bring the individual's intelligence (brain power) to bear upon the problem and as a consequence, by removing the obstacles to uniformity of quality, remove at the same time the obstructions to increased output. The creative power of the human mind is, however, not content simply to produce the best quality under existing conditions of plant operation. So the desire to create new conditions for the more highly specialized working out of the natural laws of the process demands expression, and this expression at once takes

the form of suggestions for improvements in mechanical devices.

This desire contains within it the germ of economic thought which will unfold and express itself eventually in a request for cost records, and the organization that neglects its opportunity to satisfy this desire is overlooking one of the great avenues leading toward intelligent productive effort.

Because of the interrelation of Quality, Quantity, and Economy records, any complete record of individual progress must, of course, take them all into account. However, as this is not always practical, we have at least one of three ways of measuring progress always open to us.

As further illustrating the necessity for giving individual records to the men, we discovered that the backtenders who sometimes work on other shifts than



BY MAKING THE MEN MASTERS OF THEIR MACHINES

When the machine was master of the three workers whose October records are shown on the opposite page, the highest average attained was 77.8. Permitting the worker to introduce his own individuality by November moved all the averages, although in varied degree, above 85; by May all had reached a practically uniform degree of efficiency

their regular ones lost interest in their records to a certain extent when on a different shift. Therefore, a request came to keep the backtenders' records separately, so that no matter what machine-tender he happened to be working for, his record would follow him.

This was done, and the two records of November 26 and May 9, reproduced on page 166, show clearly not only the gains made but the increasing competition for a good record. Other factors under control of the backtenders have been already suggested for recording, and these we are planning to work upon as soon as our Research Department has had time to develop a plan.

We had an interesting experience with one of our backtenders which illustrates how men appreciate these progress records. At one plant we have two small 120-inch machines. At another our narrowest machine is 164-inch and the widest 198-inch. Whenever we have openings on these wide machines, which pay more money for backtenders, we like to advance our own men.

One of our men went from the former mill to the latter. His machine-tender, who told me the story, said he noticed this man ran his paper much more uniformly than any backtender he had ever had as regards moisture test. Upon inquiring where he had learned to run paper so uniformly, he explained our plan for letting backtenders know just what the moisture was every time a reel was changed. He said the scheme was "great" and he hoped they would start it at this plant.

Mistakes in records cause a lack of confidence. We overcame this trouble by giving "accuracy" records to the "sample tester." We had the Research Department check over the number of mistakes made each day in the "reel record" sheets. A perfect score with no mistakes we call 100; $2\frac{1}{2}$ points were taken off for every mistake. An average of eight or ten mistakes a day was a common occurrence and almost immediately this changed so that to-day a mistake is decidedly the exception.

Now to go back to our original premise that it is necessary to teach man his place in the organization. These paper machine records enabled the machine-tender to become a conscious participator in the entire process of production. The individuality of the plant, it must be remembered, is increased by developing the individuality of the men in the plant and, conversely, the individuality of the man will be increased by consciously developing the individuality of the plant.

It is equally true that the individuality of the corporation which is made up of a number of plants is increased by a development of the individualities of these plants. The unit of the corporation is the plant; the unit of the plant is the man. Because of this fact the administrative, supply, and production activities in the larger organization should be confined to policies. It should be a "policies organization" only. If it attempts to control actual manufacturing operations in detail, it at once interferes with the individuality of the unit plant, and consequently with its creative power.

The Problem of Present Day Industry.

One often hears it said that it is impossible to manufacture either as cheaply or as well in a plant which is part of a larger organization as it is in an individually owned plant where those with whom rest the final decisions are right on the job. This is true.

But we cannot go back to the old order with all its wastes of competition; therefore we must solve the problem of uniting men without, at the same time, crushing them. And this solution cannot be reached without a knowledge of the philosophy of individuality.

The paper maker is in the fabricating department of the production division and I will now again trace his knowledge of each division through administration, supply and lack against to production. This will complete the analogy.

By proper evolution, of course, he is furnished with knowledge of his own definite relationship to the whole process of manufacturing. The knowledge of individual performance as related to the work done by others he sees leads to just compensation. The quality of the paper enables him to be conscious of the selling side of financing — he knows that the customer's satisfaction with the output depends upon its quality, over which he has very definite control — the quality being reflected in the progress record.

He also knows that better quality brings a higher price. He is further conscious of his contact with the receiving side of financing by knowing that increasing the moisture test (which also very materially betters the quality of the paper) decreases the shrinkage, so that the same amount of raw material will make more paper. An increase of 1 per cent in the moisture test decreases the cost of our paper 50 cents per ton. Planning he contacts through his constantly expressed desire for improvements in process suggested by his knowledge of needed changes in the paper machine. As he obtains better results from the changes, the improvements reflect themselves in the quality record.

The paper machine becomes an instrument through which he can express the art of paper making, and the records become organized facts available to all and gradually accumulate to form the basis of a real science of paper making.

We must not forget we can only have a great art where the organized facts which record the science are so complete and comprehensive that the individual who wishes to express the art can master the natural laws recorded in the science.

In conclusion, does not the problem after all resolve itself into a conscious realization of man's part in the great universal creative plan?

As has been previously indicated, industry has to do with three great fields of activity.

On the one hand we have the field of natural or universal activity, which functions according to pre-determined law. The so-called exact sciences, such as chemistry, physics, and mechanics, record the operations in this field. It has to do with our raw materials, out of which the finished products are created.

On the other hand we have the field of plant unity — that "spirit of the whole," which reflects itself as esprit de corps. It is this that we must develop if the plant is to become sufficiently individualized to be a creative centre for consciously specializing nature's laws.

Between the field of natural or universal activity and the field of plant unity we have that great field which we may call The Will of Man. For man considered generically forms the one connecting link between these two fields. As an individual, he is free to work with or against the great law of natural evol-

ation; that is, constructively or destructively, and this fact emancipates him from the operation of the exact sciences. If the employer attempts to confine or repress this free spirit in the individual workman by exploitive methods, he will rebel and work against him. On the other hand, if the employer stimulates free self-expression by encouraging conscious, i. e., thoughtful participation, he will release such powerful creative forces within the organization that no obstacles will be too great to be overcome.

The Way to Eliminate Industrial Unrest.

When the majority of our industrial institutions are organized along these lines, men will begin to realize that they are free only when they conform to natural law.

The main function of the administration division is

to provide an environment in which the greatest possible number of men in the production divisions have the very best opportunity to express their individual creative power in constructive work. And it is the main function of the supply division to provide a sufficient quantity of the most suitable materials in order to develop the highest type of organized creative power.

There is no other way to eliminate industrial unrest, for man is not an animal, but a free, self determining, mental centre of consciousness, who exists that the universal life can deal with a particular situation in time and space, and thereby be enabled to evolve a material universe organized to express the one great individual life of which we are all a part.

BACK TENDERS MOISTURE RECORD									
Date <u>NOV 29 1917</u>									
No. 1 Machine					No. 2 Machine				
Name	Moisture		Progress Record		Name	Moisture		Progress Record	
	Day	Period	Day	Period		Day	Period	Day	Period
RAOUL	7.9	7.7	94.1	94.2	FRYON	7.7	7.8	92.7	93.1
CLELAND	8.3	7.8	82.7	83.8	DREW	7.4	7.5	81.8	80.2
DOANE	7.9	7.6	89.3	83.5	ALLEN	7.4	7.2	84.2	78.9

BACK TENDERS MOISTURE RECORD									
Date <u>MAY 9 1918</u>									
No. 1 Machine					No. 2 Machine				
Name	Moisture		Progress Record		Name	Moisture		Progress Record	
	Day	Period	Day	Period		Day	Period	Day	Period
WOOD	8.0	8.0	97.3	95.5	RAOUL	8.0	7.9	97.5	92.1
CLELAND	8.1	7.9	92.7	92.0	DREW	7.9	7.8	95.0	91.9
JONES	8.0	7.8	94.4	90.2	FRYON	8.0	7.8	95.6	91.8

A CONTRAST IN RESULTS

"Invariably the competition is keen enough on all quality records to bring nearly all the men to practically the same degree of proficiency," says Mr. Wolf. These records, made six months apart, show a great difference in the degree of variation

PRESENT CONDITIONS AND PROSPECTS FOR PAPER TRADE ON THE PRAIRIES.

A few weeks ago the Editor asked John Martin, president of the John Martin Paper Co., Winnipeg, to tell us something about things on the Prairies. On recovering from illness sufficiently to get back to his desk, about the first thing he did was to write the following inspiring letter. He has located the bed-rock of our national prosperity and well-being:

"Upon entering this reconstruction period, about all one can do in forecasting the future is to carefully consider existing conditions and if we all act together it would help considerably in determining the future. Let us emphasize the importance and necessity of closer co-operation with a truer and a more complete co-operative movement in Canada among the manufacturers and distributors.

Let us take our lesson from the great military struggle, when the value of union was not discussed. It was the base and ground work of all, and if Canada is to compete, in the future, with other great nations of the world, in the field of trade and commerce, there will be need for closer union and more complete co-operative efforts. The social and economic changes will take their deservative prominent place in the industrial and commercial future of our Dominion, so in this re-adjustment period, let us shake ourselves clear of the regrets, disappointments, and prejudices of the past and may we be found living examples for service and that our influence for good be felt for the betterment of all humanity.

We Western business men realize the impossibilities and the possibilities of our fair Dominion. The impossibility to reduce manufacturing costs to what they were, as the prices of former years were not justified by cost conditions then prevailing and with such possibilities before us, we must look, not only from a manufacturing standpoint, but an agricultural as well. We, in these prairie provinces, naturally desire greater production from agriculturists, realizing that less than 12 per cent of our arable land is under cultivation and with thirty million acres idle, we feel as if we have only scratched the surface.

The statistics of last year have just been completed, and show that our revenue from the soil in the three prairie provinces amounted to \$386,500,000 so naturally we are very optimistic. Our manufacturing interests are growing rapidly and with electric power at exceptionally low rates. Winnipeg is very attractive to the manufacturer.

Let us as a unit build up Canada and may our watch words be, Mutuality, Reciprocity and Co-operation.

There is yet much work to be done of a fundamental nature because we do not know all of the physical and chemical properties of the individual fibres or how these have been influenced by the treatment to which they have been subjected before going to the paper mill. In fact, this fundamental investigation of the fibre, if complete, should be begun with the tree, since the initial character of the wood may easily be considered to have an effect on the quality of the product.

Book Paper Investigation to Include Sulphite

The visit of Commissioner Pringle to Toronto last week to re-open the investigation into book paper and half tone news resulted in a representative gathering of the trade at the Parliament buildings. There was a large array of counsel, including Glyn Osler, K.C., Toronto, who is looking after the trade and class publishers; H. A. Stewart, K.C., of Brockville, representing the Federal Government; J. M. Godfrey, K.C., Toronto, representing the Provincial Paper Mills Co., the Toronto Paper Mfg. Co. and the Kinleith Paper Mills; George H. Montgomery, K.C., of Montreal, representing the book and writing section of the Canadian Pulp and Paper Association.

Mr. Pringle stated that he was prepared to deal with the prices of book paper with an open mind. He said that over a year ago it had been decided that the cost of book paper might be arrived at by having the Government auditor examine the books of the manufacturers. The plants of the Provincial Paper Mills Co. and three other companies had been chosen. He stated that Mr. Clarkson and staff had examined the books and records of the Provincial Co., and from what had been learned he thought the price charged was a reasonable one. Mr. Clarkson has reported to Mr. Pringle to that effect, and he (the Commissioner) could not see much use in going on with the inquiry unless Mr. Osler, counsel for the trade and class section, could prove that the figures of Accountant Clarkson were incorrect, and the profits of the Provincial Co. unreasonable.

Mr. Montgomery also objected to the investigation proceeding on several grounds, and protested most strongly against control being exercised over this industry while other industries equally important were allowed to escape. There was no necessity for any further investigation. Publishers could charge just what prices they liked to the consumer and make what profits they chose, but in the case of the book mills, the trade and class section wanted to confine them to cost—plus. Mr. Montgomery went on to point out the conditions which prevailed when the inquiry was started, and how the necessity of any further probe had been eliminated. The publishers had been playing with the book paper industry by requesting these investigations to the detriment of the industry itself.

The publishers, Mr. Montgomery contended, were only one factor between the consumer and the public, and the government should not be interested in taking money out of the pockets of book paper manufacturers to put into those of the publishers.

Mr. Osler replied to the different objections, and finally it was decided to call Auditor G. T. Clarkson, who took the stand. He stated that three months had been spent by his staff on the examination of the books of the Provincial Paper Mills Co., and it was shown in cross examination that the profits of the company for the last six months of 1918 had dropped from \$272,000 to \$210,000. The profits for the year were about \$410,000 which, without including the war tax, was a return for the year of 20½ per cent. The net profits in 1917 were \$383,333, and in 1916 \$416,594. Subject to certain specified charges, it was shown that in 1914 the profits were 8.65 per cent. of

the selling price; 1915, 11.22 per cent. of the selling price; 1916, 16.75 per cent. of the selling price; 1917, 13.06 of the selling price, and for the first six months of 1918, 19.07 per cent. of the selling price. Mr. Clarkson maintained that the depreciations set by the company were correct and that the capitalization of two million dollars allowed the organization would be permitted by any tribunal anywhere considering their assets. It was also brought out that the average differences as between "cost" and "selling price," per 100 pounds, had been as follows: In 1914, 38c.; in 1915, 45c, or 118.42 per cent. of that in 1914; in 1916, 93c, or 244.73 per cent of that in 1914; in 1917, \$1.10, or 289.47 per cent of that in 1914, and in the first six months of 1918, \$1.47, or 386.89 per cent of that in 1914.

In spite of the increase in the cost of labor and raw material, due to war conditions, the company had, Mr. Osler contended, from 1915 on received back from their purchasers the full amount of the average cost, on 1914 basis, the whole of the extra cost actually incurred through the higher price of labor and materials, the full margin of profit they would have made under 1914 conditions, and an additional average profit, per 100 pounds, of 7c, 55c, 72c and \$1.09 respectively in the periods set out above.

Mr. Osler suggested that it would be advisable to get information from some other book mills, and thought the necessary data could be obtained by means of a questionnaire. To this Commissioner Pringle replied that a questionnaire was of no use, and did not get the facts desired. Mr. Pringle added that he was willing to have a member of the staff of Mr. Clarkson go into the books of any mill that Mr. Osler might name and secure all the information desired. Mr. Pringle stated that he desired to get at the bottom of things as to whether a fair price was being charged. The official would gather such figures as Mr. Osler desired, and that, too, without delay. Mr. Pringle did not think that the Government, if the prices were shown to be reasonable, would continue to control paper prices.

Mr. Osler then asked for an investigation of the books of the Riordon Pulp and Paper Co. As sulphite played an important part in the production of book papers, he thought the books of the Riordon Co. should be investigated. Mr. Pringle stated that he would consent to Mr. Osler's suggestion, and remarked that the Riordon Co. had been making large profits. When complaint had been made to him about the price being charged by that company for sulphite, he had taken the matter up with the officials and the figure had been reduced.

The investigation then adjourned, and in the meantime, the examination of the books of the Riordon Pulp and Paper Co. will be proceeded with by the staff of Auditor Clarkson.

FRANCE WANTS PULP, PAPER AND MACHINERY.

A distinct revival in pulp and paper circles in France carries a fine opportunity for manufacturers on this continent. Pulp and paper dealers want our products and we have an inquiry for an introduction to a house making grinders, etc., that would like to arrange for an agency.

CANADIAN LUMBERMEN MET — RESULTS ACCOMPLISHED.

The eleventh annual convention of the Canadian Lumbermen's Association was held in St. John, N.B., on Wednesday and Thursday, February 5 and 6, and was largely attended, there being over a hundred delegates present from Ontario, Quebec, New Brunswick and Nova Scotia. Much important business was transacted and the reception accorded the visitors was cordial and sincere, the local committee of arrangements doing everything in its power to make the stay of the city's guests pleasant and memorable. The present membership of the Canadian Lumbermen's Association is 128, an increase over last year of 31.

An important decision was the changing of the number of directors to twenty-one, seven to retire at the end of each year, thus ensuring continuity of service. According to the membership, Ontario is entitled to ten directors; Quebec, six; New Brunswick and Nova Scotia, four, and the western provinces, one. Those nominees who received the highest vote were appointed for three years, those next highest for two, and the lowest for one year.

It is interesting to pulp and paper manufacturers to learn that they are well represented on the new Board of Directors. W. G. Power, President of the C. L. A., who is managing director of the River Onelle Pulp and Lumber Co., St. Pacomé, Que., and Alex MacLaurin, Managing Director of the St. Maurice Paper Co., Three Rivers, Que., were elected directors for three years from Quebec province. Angus McLean, President of the Bathurst Lumber Co., Bathurst, N.B., was elected as one of the three year directors from the Maritime provinces, and Archibald Fraser, of the Fraser Companies, who operate a large sulphite plant at Edmundston, N.B., was chosen a director for one year. In the election of officers for 1919, W. Gerard Power was returned as President for a second term unanimously. It was decided to hold the next annual convention in Quebec city in February, 1920.

Among the most important matters was the decision of the Eastern spruce manufacturers who recently formed an association in Montreal to join hands with the Canadian Lumbermen's Association and form a section of that body. This step was taken at a well attended gathering at which Angus McLean, Vice-Chairman, presided. It is likely that the white pine manufacturers will also form an association in Ontario and become another section of the C. L. A. In this respect the work and worth of the Canadian Pulp and Paper Association in having all branches of the business included in its membership and directing the interest of the various bodies by means of sections all working for the good of the industry as a whole was favorably referred to.

Among the most important topics on which action was taken was to recommend that all railways in the Dominion be brought under the administration of the Board of Railway Commissioners, including the Canadian Government Railways, in order to secure efficiency of fire protective measures and conserve the interest of the forests. It was urged that the necessary legislation be prepared and introduced at Ottawa during the forthcoming session.

Another resolution of note was one proposed by Angus McLean to the effect that, in order to gain accurate information regarding the available supply of lumber in Canada, there should be sent by the members to the secretary each month, on printed forms, the total amount manufactured, the total amount sold and the total amount shipped out, together with the value of sales, and that the aggregates be compiled and forwarded to the members from month to month. This will aid in regulating production and afford the members some conception of the amount of lumber cut, the demand, sales, etc.

It was also decided that as prompt a return to pre-war conditions as possible should be accomplished in the export of lumber to Great Britain. It was deemed expedient that legislation should be introduced at the forthcoming session of parliament to place on the statute books a Dominion Bankruptcy Act. The president and the secretary of the Association will appear before the committee of the house when the bill is being discussed in committee to favor the proposition.

Another outstanding feature of the convention was urging an accurate survey of all standing timber in Canada, showing the various kinds of lumber, quality, location, and accessibility, together with available means of transporting the same to the nearest market. Also a report of all cut-over lands, which are suitable only for forest growth, with the extent and location of same would be most valuable information, not only to lumber operators, but to the Dominion and various provincial governments, thus enabling said governments to develop to the fullest extent a permanent forest policy which would have the effect of conserving the great natural resources contained in Canada's forests. It was also urged that the various governments provide adequate financial assistance and clothe the Commission of Conservation with the necessary authority for the purpose of accomplishing the end in view. Copies of the resolution will be forwarded to the different governments and to the Commission of Conservation.

NEWSPRINT PRICE EXTENDED.

The extension of the \$69 price from Feb. 1st to March 31st, was the principal feature of interest in the Canadian newsprint situation at Ottawa last week. The order extending the price was officially made by the Paper Controller on Saturday last, and carries with it the provisions of previous orders.

The advancement of the price for the next two months was doubtless taken in face of the yet unannounced decision of the members of the Paper Control Tribunal, which will not be made until Mr. Pringle has further advanced his inquiry.

Outside of the advancement of the price the chief interest of the paper trade centred on the book print inquiry which was being held at Toronto.

So far as could be ascertained at Ottawa labor conditions with the mills had reverted to their normal channels, and no industrial disputes as affecting the manufacturers were heard of.

Up to early this week no date had been announced for the continuance of the Canadian Newsprint Inquiry.

WAXED PAPER AND ITS USES.

By A. L. ELWOOD, British American Wax Paper Co., Toronto.

It is not many years since waxed paper was invented, and only recently has the process of manufacture been perfected. Yet innumerable uses have been found for it, and other uses are being found almost daily.

Waxed Paper is made in many grades, weights, colors and designs, but invariably a paper basis is chosen that is strong in fibre and supple in character.

This is then scientifically saturated with paraffin wax, odorless, tasteless and absolutely moisture-proof.

The process varies according to the result desired. Three types of waxed paper are in general use:—

1. The impregnated, or "dry waxed."
2. Paper coated on one side.
3. Fully waxed paper, or "surface coated."

Each of these is used for a different purpose and each can be made in any required grade, weight or design.

It should be added, by way of parenthesis, that paraffin wax is the perfect food product preserver. Nothing can possibly contaminate that which is enclosed in it. It preserves any ordinary substance almost indefinitely, and should the wax, by any chance, be eaten, it cannot possibly do harm. Indeed, the factory hands are constantly chewing it, and they are as healthy a bunch as one could see anywhere. But, as a matter of fact, so scientifically does the British American Wax Paper Company's process impregnate the paper, and remove superfluous wax, that not a trace of it can adhere to anything in contact with it. A question is sometimes put to the wax paper manufacturer, somewhat after this fashion:

"We admit that those wrappers printed in colors in artistic designs, make a most attractive display. They add distinction to the goods, and they carry the advertising right home in a way that newspaper advertising cannot do. But, in the case of food stuffs, do you think it is right to have that printed matter in contact with it?"

Let there be no misconception on this point. That objection, a very strong one, against the use of ordinary printed paper as wrapping material, does not hold in the case of waxed paper. All printing is first done on the paper stock, very carefully dried, and not till then is the paper coated with wax.

The glossy wax coating, which is such a perfect protection for food, not only enhances the effect of the print, but protects the contents of the package from paper and print equally as well as from outside contaminations.

But where the waxed paper is used as the outer wrapper, as in the case of certain cereals, it is used plain and not printed. The "surface waxed" paper is perfectly transparent, clearly shows up the print on the carton underneath, and provides a perfect, hermetically-sealed wrapping.

As will be supposed, it took years of patient experimenting and scientific skill to produce an article of such perfection, but the fruit of its labor is a product that, for quality and usefulness has no rivals.

Some of the Uses of Waxed Paper.

Briefly the advantage of wrapping goods in waxed paper is this: They reach the consumer exactly as they left the factory. All deterioration is prevented whether from atmospheric conditions, unclean handling, foul odours, or other causes.

The advantage to the manufacturer is readily seen. He is saved all blame for deterioration of quality, or adulteration due to carelessness or dishonesty. His customer is assured of pure food, hygienically wrapped, full weight, or in the case of non-food products, of perfect condition; and is neither critical or suspicious. Moreover the wrapping readily lends itself to distinctive treatment of color and design, and it is of the greatest possible advertising value.

Being absolutely impervious to atmospheric conditions, moisture or dryness, and resistant to heat and cold, waxed paper is used to keep moisture away from cereals, biscuits, sugar, explosives, gelatine, metal goods, painted surfaces, chemical salts, and many other articles. It serves equally well, and is just as extensively used, to retain moisture in bread, sweets, cakes, chewing gum, washing powders, tobacco, cheese, figs, dates, meats, soaps.

Sticky substances do not adhere to it. It is especially useful for wrapping confectionery. As it is completely impervious to odours, it not only prevents contamination, but it is invaluable for retaining the appetizing aroma of coffee, the flavor of tobacco, the delicate perfume of soap. It permits the mellowing effects of age to be secured without the loss of fullness or delicacy of flavor, aroma or perfume, as the case may be.

It readily lends itself to use in automatic machines, in a cleanly, rapid way, at a fraction of the cost of hand wrapping. Thoroughly dependable wrapping machines are now made for a great variety of products. It is a most interesting sight to go into one of our large up-to-date bakeries, and watch the stream of loaves, untouched by hand, coming out of a self-sealing bread-wrapping machine at the rate of thirty a minute. A special grade of waxed paper is used, and a loaf so wrapped is hermetically sealed, not only at the ends, but along the seams. Candy wrapping machines are equally efficient, and easily run up to a speed of four hundred a minute.

For Bread—Must be Tried to be Appreciated.

Waxed paper is the only satisfactory medium for the wrapping of bread. It produces a neater package, keeps the bread moist, and retains the weight for a longer period.

The Kansas State Board of Health, as the result of exhaustive experiment, adds, "leaving out the purely sanitary reasons, which after all are the greatest for wrapping bread, our results agree that its flavor is enhanced."

It has been found that a loaf of bread wrapped in waxed paper, owing to the fact that it retains its full weight, can be made with from one-half to one ounce less dough and still give the customer the same weight in the loaf. This offsets the cost of the paper.

Moreover, there are not returns of wrapped bread, and no loss owing to staleness. In the case of fruit and other fancy loaves, it is sufficient to bake only once or twice a week, for when wrapped in waxed paper, that which is three days old is indistinguishable from the freshly baked.

And finally a loaf in a waxed wrapper with the baker's trade mark, fully protects both baker and customer from substitution.

Candy—Made Doubly Attractive.

The smooth velvety attractive squares of waxed paper are now in general use for confectionery. Most lovers of sweets would hesitate to buy nowadays were the familiar waxed wraps absent, so efficient are they in protecting from dust, dirt, flies, and handling, and so

effective in preventing hardening or drying, stickiness or loss of shape.

Tobacco—With Full and Perfect Flavour.

Quite recently waxed paper has been employed for wrapping packages of tobacco and boxes of cigars, with conspicuous success. Wrapped tobacco has been found to give greater satisfaction with a consequent and gratifying increase in sales.

The Customer's Attitude.

In fact, it is the universal experience that the customer readily responds when it is found that the wrapping secures him full weight and perfect condition in every purchase.

The retailer finds that waxed paper wrapped goods save trouble in handling and give greater satisfaction. There is no loss by shrinkage or careless weighing, and they lend themselves to a more attractive display.

For the convenience of clients waxed paper is supplied in rolls or in sheets cut to any size, printed or unprinted, with any desired weight of paper and percentage of wax.

MOTOR LOGGING IN SPARSE GROWTH.

How heavily loaded motor-trucks have been bringing out spruce for airplanes in the Pacific Northwest, over unstable soils and through mountainous country, is related by a contributor to *The Engineering News-Record* (New York, December 26). This was effected, we are told, by the construction of specially designed plank roads, of which the most interesting were built like a railway, with a line of planks for the wheels on each side, and guards on the inside of each line to keep the wheels from running off. High efficiency and a low cost of maintenance for the trucks are reported, according to the editor of the magazine named



AN EASY HAUL FOR A BIG ONE.

above, despite heavy grades and overloads. We read:

"Plank roads constructed at moderate cost made it feasible to get motor-trucks into many of the thinly scattered stands of spruce along the north Pacific coast, and without the motor-truck or some other form of mobile and quick transportation spruce from these forests could not have been brought out at the rate required by the Government's Spruce Production Division. Thus, plank roads suddenly became of greater

importance, perhaps, than ever before, and various improvements in design and construction were developed. It is notable that, contrary to the usual practice on temporary roads, accurate location surveys with transit were made under the direction of an engineer. This has been particularly worth while, because of its effect in decreasing first cost and maintenance of the planked surface. A great decrease in tire wear on plank roads, as compared with gravel surfaces, is also reported.

"Two types of construction are used on these roads. In one the planks are placed crosswise, while the other calls for longitudinal planking and is known as the 'fore-and-aft' type. For the former type eight-foot planks were used at first, supported on stringers placed under the lines that the wheel treads would follow. This did not allow much margin of safety, so ten-foot planking was tried. On this wider road-bed, however, the drivers did not keep over the stringers, and this greatly increased the cost of maintaining the roads. To overcome this, the standard width was again placed at eight feet for tangents and the 'fore-and-aft' design was improved and used on all grades less than four per cent. Where grades are steeper cross planking is considered necessary, to avoid slipping in wet weather.

"What is considered a great improvement in the 'fore-and-aft' construction was effected by putting guard-rails in the centre at the inner edges of the plank tracks, where they could be cross-braced. This is found to constitute a very safe type of construction, strong and stable, which does not require as many plank as the crosswise type. The guard-rails must not extend more than six inches above the plank, so that they will clear the brake rims of the trucks. The turn-outs are put in every five hundred feet on tangents, and on all curves which do not admit of a clear view to the next turn.

"Motor-trucks have been used both in the construction work and in the actual delivery of spruce logs from regions where the spruce stand is light, and are reported to have proved very effective."—From the *Literary Digest*.

Manual training innovations in the high schools of Minneapolis, Minn., include courses of instruction in paper-making by hand. The making of deckled-edge paper is the first part of the process to be taught. The method of pulling apart linen and then soaking it overnight to get a pulp is to be followed. The pulp is then to be made into paper with the addition of gelatine as a filler after the pulp has gone through a roller process. A wood-block print process will be used to convert the finished paper into Easter cards, book-covers, calendars and other decorative novelties.

There is a bunch of live wires at Iroquois Falls. Social and athletic events keep life from growing dull. Last year basketball was the major sport. This year it is bowling. Further opportunities for reading and study would nicely round off the activities of the place. Abitibi means to keep up with its alphabetical position. We saw Harry Buneke in New York, and expect he will soon be back with his usual enthusiasm.

Reports of the Sections of C. P. & P.A. for 1918

REPORT OF THE NEWSPRINT SECTION.

By GEO. M. McKEE, Chairman.

The year just closed has been one of great activity for the Newsprint Section of this Association; all of the mills have been running at practically full production, averaging throughout the twelve months' period 97.7 per cent. of maximum capacity, resulting in a total production of 699,310 tons for the fourteen Companies reporting to the Section, as compared with a production of 602,905 tons for 1917. During the year there was one new machine started in the East and two or three on the Pacific Coast. From present indications, few new machines can be put into operation during the present year, and the chances are that production for this year will be only slightly higher than last.

The Section has been particularly active in defending its members in the Newsprint investigations before the Controller at Ottawa, and the Federal Trade Commission at Washington, these investigations requiring almost the entire time and attention of some of our members. The Federal Trade Commission, acting as arbitrators, handed down its findings and award June 18th, 1918, fixing the price of roll news at \$3.10 per 100 lbs., from April 1st., 1918. This award was appealed for review to the Judges of the United States Circuit Court for the second Circuit, acting as reviewing arbitrators. On September 25th, 1918, the reviewing arbitrators made findings and fixed the price of roll news at \$3.50 per 100 lbs. Subsequent to the findings of the Federal Trade Commission there was submitted to the Commission conclusive evidence to the effect of changes in rates of wages, freight rates, and wood costs since April 1st., 1918. This evidence was taken under consideration by the Commission, and on October 19th., 1918, they handed down supplemental findings, fixing the price of roll news at \$3.75¼ par 100 lbs., as of July 1st., 1918.

In spite of the thorough discussion of the subject, and the clearness of the reasoning in the reviewing Judges' findings, there still seems to be a general inability, or unwillingness, on the part of consumers to understand why the price of Newsprint paper has advanced, and they are now attempting to have the whole question opened up again.

The Ottawa investigation has been more annoying and complicated to our members, involving, as it did, the question of differentials in the distribution of the Canadian tonnage. Happily, the matter of differentials was settled for all time, by agreement, among all mills excepting one. The payment of the differential to this mill, as well as the final fixing of a Canadian price is now in the hands of the Appeal Tribunal for their consideration. An interim award has been handed down, the contents of which have been made known to the members.

All of these investigations have been a matter of heavy expense to our Section, involving an expenditure for the year of over \$33,000 for the Canadian investigation, with further heavy payments to be made; in addition, the Signatory Mills to the Federal Trade agreements have been called upon for very much larger payments for the Washington hearings.

The Publicity Department of our Section has been of

great assistance to the entire industry, in the distribution of a number of valuable Bulletins, and the publication of many special articles placing the facts before the public, and I am sure it will be admitted by all that the percentage of people who appreciate the value of the paper industry in our country has been increased to an astonishing degree by this means, and should be increased and extended to other sections of the industry.

The outlook for the Newsprint industry during the reconstruction period is good, as compared with many other industries. There are no evidences of over-capacity, and stocks are not large. Furthermore, there will probably be a considerable rebound in the printing and publishing industries. They have been repressed by war conditions, and a reaction is due. The market for a number of years has been entirely in the manufacturers' hands, while the future will require clear headed salesmanship to maintain a selling price to give a profit over the increased cost of production which must continue throughout the present year.

REPORT OF THE BOOK AND WRITING SECTION.

By R. S. WALDIE, Chairman.

The year 1918 was an eventful one for all the mills of the Book and Writing Section. War-time conditions made it difficult, and in some cases impossible, to secure raw materials. At the same time, we had difficulty in keeping up with the demand for our products. It was, therefore, very gratifying to hear one of our largest Canadian buyers publicly state that in his opinion, no other class of consumer throughout the world had been as well taken care of during the four years of the war as the Canadian users of paper. This testimony is all the more noteworthy as at the beginning of 1918, certain publishers of trade and class magazines made allegations to our Government to the effect that the Book mills were charging exorbitant prices; were part of an illegal combination, etc., etc., with the result that the Government appointed a Commissioner to investigate these allegations. This caused our mills a great deal of work and time when the responsible officers were fully occupied in looking after their normal business. The only result has been that the Commissioner has not found that any of the complaints were founded on fact.

During the past year, the Book and Writing Section has adopted standard substance numbers in both writing and book papers, and these are now incorporated in the Trade Customs. We acknowledge with thanks the helpful co-operation of the Canadian Paper Trade Association in the adoption of these standard bases, as well as in other constructive measures. It is submitted that the time has now arrived when we should consider whether it would not be for the general welfare of the paper trade to have the paper dealers affiliated with the Pulp and Paper Association.

The book and writing mills during the past year came to the conclusion that they should sell their goods on a f.o.b. mill basis, and where equalization is necessary, freight allowances may be made. We have also adopted the American Association's classification of rags, and we hope that this will be

beneficial to the rag dealers; to the paper mills, and to the paper consumers.

This Section strongly endorses the advertising campaign of the Pulp & Paper Association. We realize that the war has brought our people closer together than they have been in the past, and Canadians would prefer to use Canadian made products. It is, therefore, our duty to let them know what lines are made here.

In conclusion we beg to state that it is our opinion that we shall come through our reconstruction period with little or great disturbance exactly in proportion to the measure of co-operation we adopt with one another and with our customers.

REPORT OF THE BOARD SECTION.

By JOHN F. TAYLOR, Chairman.

The Board Section has come through a very satisfactory year. We held four meetings at which most of the mills were represented. We also held several committee meetings for the purpose of discussing questions relating to wall board, white lined and other special grades of board. Other committee meetings were also held in regard to the preparation and revision of the Trade Customs, which have now been completed and final proofs are to be submitted to the members of the Board Section during the present meeting.

The total production of all grades of board by the various mills was 86,944 tons, an increase of 6,100 tons, or about 8.4 per cent, over the year 1917, which shows a good increase. Of this tonnage 64,477 tons were sold in Canada, 17,438 tons exported, and the balance, viz., 5,029 tons, was used by the various mills themselves.

We have not been able to get any very accurate figures as regards imports of board, for as most of you know the old Customs Classification was not of much service in this respect, and in a great many cases it has been impossible to get the quantities imported. The only item in which we have been able to get the quantities is that of straw board, and we find for the year ending the 31st March, 1917, there were 4,538 tons of straw board imported against 4,849 tons for the year ending 31st March, 1918, so that taking an average of these two tonnages the quantity imported for the year 1918 would be 4,688 tons, and the average value of straw board imported for these two years is \$220,095.

With regard to other importations — card board and mill board, not pasted or coated, was imported for the year ending the 31st March, 1917, to the value of \$225,580 and for the year ending the 31st March, 1918, \$253,223, making an average which we may safely take for the whole of 1918 of about \$239,400. No quantities are given for either of these items, and as values have been steadily increasing for the last two or three years, it is impossible to estimate the quantities imported.

From the above figures the total importations of card board, mill board and straw board shows an average of approximately \$460,000 per annum during the last two years for which returns are available. The Customs Department have put a new classification into effect, so that commencing from the first of April next, we expect to get fairly accurate information in future both as regards quantities and values.

No new board mills have been built, and while orders have fallen off somewhat since the turn of the year, most of the mills continue to be booked ahead, some of them being as much as three months behind on orders.

A very cordial relationship continues to exist between the board mills and the box makers, and we are looking forward to an even more successful year than the last.

REPORT OF COATED PAPER SECTION.

By GEO. W. PAULINE, Chairman.

Several meetings were held during the year, and various matters were taken up.

The Government restrictions put into force, by the War Industries Board of the United States, were fully discussed, and although no Government measure was applied in Canada, it was felt that it was only good sense and common decency to our friends across the line, to follow suit voluntarily. So with some modifications to suit the requirements of the Canadian trade, the American restrictions were unanimously adopted. They have been strictly adhered to, and have been the means of correcting a number of abuses, that previously were considered a necessary evil. Altogether they have been very successful, and have worked beneficially to mill and consumer alike. Under the circumstances it is felt advisable to continue permanently many of these restrictions, and embody them in the general Trade Customs.

The mills were all fully employed throughout the year, and were taxed to capacity to keep up with the demand.

Export inquiries have been very numerous, and in some cases orders were accepted and filled.

There has been a slight easing off in business since hostilities in Europe ceased, no doubt caused by the fact that in some instances, stocks were fairly heavy, and in others by expectations of a drop in prices. We do not look for any change in this respect, for the present, at any rate, as manufacturing costs to-day are higher than ever before.

It only remains for us all to carry on with a spirit of optimism during the period of reconstruction, to ensure the success and prosperity of Canada, and keep her in the front rank as a part of the Great British Empire which to-day stands higher than ever in the eyes of the world.

REPORT OF THE FELT PAPER SECTION.

By G. M. GRAVES, Chairman.

This Division has held regular monthly meetings throughout the year. The good attendance at these meetings indicates the interest of the members in the welfare of this industry as a whole.

We have not escaped troubles and vicissitudes experienced to a greater or lesser degree by all manufacturers, such as, fuel supply, freight difficulties, shortage of labor, etc., but the hearty co-operation of all members and the assistance given each other in extreme emergency has all accrued to our common benefit.

We have proven again that this country does produce rags enough to supply the industry, although we were obliged to be constantly on guard to prevent embargo permits being issued by the Government at Ottawa, for shipment out of the country. We are

very gratified to acknowledge again our indebtedness to the Canadian Pulp & Paper Association, which has, through Mr. Dawe, so ably and vigorously protested the granting of these permits.

The classification of rag stock has generally been maintained and is being universally recognized as the standard of grading. This is a source of gratification to the responsible rag packer and dealer, as well as to the felt manufacturer.

The year 1918 has been a very satisfactory one, both in volume of business and fairness of price, and we are looking forward to the year 1919 with the expectations and hopes of another year fully equal or better in business.

REPORT OF THE WRAPPING PAPER SECTION.

By F. H. WILSON, Chairman.

Generally speaking, conditions in the wrapping paper business continued good during the year 1918.

Towards the end of March, and in the middle of May, due to increase in costs, prices on the cheaper grades were advanced, and in the middle of July and in the middle of September it was again found necessary to slightly increase the prices on the cheaper grades as well as on No. 1 Manila and Fibres.

This is the dull season of the year, and, as is usual at this time, orders are not as plentiful as in the other months.

Prices have been, and are at present, well maintained, and although due to the uncertainty in general trade conditions caused by the Armistice, there is a tendency on the part of buyers not to commit themselves for more than actual requirements, yet the outlook is favorable for a continuance of stable conditions throughout the present year.

REPORT OF THE CHEMICAL PULP SECTION.

By CARL RIORDON, Chairman.

The Chemical Pulp Industry of Canada, in common with other industries, experienced many difficulties during the opening months of 1918. On top of three and a half years of our own war activities, came the conversion of the United States industry from a peace to a war basis, with far-reaching restrictions on labor, finances, raw materials, fuel, machinery, cars, ships and paper consumption, and on top of these again came an extremely severe winter. However, the resultant dullness was practically cured by May when the United States reached a war basis and the industry has since been getting back to a fairly steady position.

Production by Canadian mills during the year has been satisfactory. In an appended table will be seen the record for 1917 and 1918, with an estimate of production in 1919. The estimated production of Canadian kraft mills is given in another table. During the year the Port Arthur, Mattagami, Fraser and Whalen Sulphite Mills came into operation as well as the New Brunswick and Colonial Sulphate Mills. All of these seem to be sharing the growing success of the industry. There is only one mill under construction at present, the Kipawa mill, which will make 100 tons per day of bleached sulphite.

The Chemical Pulp Section has maintained the full degree of co-operation in the matter of statistics, which it established three years ago. Kraft figures are not yet complete, less than 50 per cent of the ton-

nage at present reporting, but it is to be hoped that the sulphate mills will co-operate fully in this regard.

The Secretary states that if members would send in their figures a couple of days ahead of the present average, the composite reports could be made up with much more satisfactory results.

The Scandinavian Cellulose Association is again ready to exchange statistics, and Canadian figures for the months of October, November, and December have been despatched to them. This co-operation can only be possible where reports are complete.

Review of War Period.

It occurs to me that the war period calls for review at this time and the following remarks, therefore, apply to the four years just ended. I have prepared several tables for purposes of record which may be of service to the members for reference.

Cost of production in Canada is now probably decidedly lower than in Europe, reversing the pre-war relation. While costs of labor and material have greatly increased here, they have not increased as much as in Europe where wood is said to be costing \$30 a cord, coal \$30 a ton, and the cost of money has risen to almost the same level as Canada, and taxes will probably be higher for some time to come. Russia, which was the main source of wood, is not in business, and Germany and Austria, who were the chief producers of high grade pulps, will not be important factors for a while.

The equalization of interest rates affords another argument for that which has long seemed desirable, viz., that the Canadian chemical pulp industry should not hesitate to lay up stocks. Much more equitable conditions in manufacture, quality and price would probably result from such a course.

In a detailed statement which is added, will be seen the prices for three grades of pulp from the first half of 1913 to the present.

Up to 1914 supply exceeded demand and prices were depressed. During 1916 and most of 1917 demand exceeded supply and prices reacted upward and again in the latter part of 1918.

The war period has witnessed progress in methods of acid-making and in the tumbler barking of wood, the one improving quality and the other increasing output and diminishing accidents and cost. In the chemical pulp mills of Ontario particularly, accident prevention has developed to a gratifying extent and the general movement looking to the safety, comfort and happiness of employees is going steadily forward.

The chemical pulp industry of America, and more particularly of Canada, stands to-day on the threshold of a great development. Newsprint has long since passed into the category of staple commodities, of which America not only supplies her own wants, but has much to spare for export. Now it is the turn of chemical pulp. Ten years ago a large part of the chemical pulp consumed in America was imported from abroad, the proportion which Canada supplied to the paper industry of the United States was quite small. To-day, according to latest figures available from the United States Government, a relatively small quantity of chemical pulp is coming from abroad to the United States, whilst the quantity which Canada has supplied to our neighbors to the South has grown very rapidly. The table of imports attached gives most interesting details of this situation.

Shipping conditions have no doubt played a great part in the restriction of imports from overseas, but even though abnormalities in this respect largely disappear in the course of the next year or two, reduction in ocean freights will be of much greater stimulus to Canadian exports than to imports from abroad.

In the fiscal year ending March 31, 1908, the value of chemical wood pulp exported by Canada to all countries was less than \$1,500,000. Canadian Government figures so far available point to a total export of over \$25,000,000 for the fiscal year ending March 31, 1919. This compares very favorably with the exports of printing paper, which will probably attain a total of \$30,000,000 in the same period.

The situation has now arrived that Canada has just about filled the requirements of the United States outside of that country's own production. Canada will doubtless hold that trade if a good quality standard is reached. Canada should now go after the trade of other countries to which she can reasonably export with a view ultimately to holding a great part of the world's trade in chemical pulp. Encouragement is given to this view by the fact that the exports of Canadian chemical pulp to Japan, for instance, have grown from a scant \$100,000, in the 12 months ending March, 1913, to almost \$2,000,000 in the 9 months ending November, 1918.

The domestic demand for chemical pulp continues to grow. Not only does it enter into grades of paper ranging from sheathing to wood bonds—and every increase in demand for these products expands the demand for chemical pulp—but new uses are constantly appearing. Explosives, aeroplane varnish, bandages and absorbent pads, which grew largely out of the war, probably mark only the beginning of a new series of products in which chemical pulp will be an important factor. Such are textiles, artificial silk, paper containers, and the numerous developments of the box board industry. Chemical pulp bids fair to make anything from a tin can to a suit of clothes.

Barometers of industrial and financial conditions, such as the steel industry, point to fair weather, and while the problems of reversion to a peace basis will give anxiety, the chemical pulp industry in Canada, should enjoy prosperity and assist materially in the rebuilding of the Dominion in the years of reconstruction.

(This report was supplemented by tables showing comprehensively production, reports, imports and prices over a wide range of years and countries.)

REPORT OF THE MECHANICAL PULP SECTION.

By J. H. A. ACER, Chairman.

Last year could hardly have been considered a satisfactory one for the groundwood section, as a whole.

During the first four months the demand was good, but the unfortunate lack of cars resulted in very light shipments. Reference to the Association's statement, showing imports into the United States of mechanical woodpulp, month by month, for the years 1913 to 1918, will show the situation very plainly. By the time cars could be obtained in the spring the demand had fallen off, due to the fact that United States mills were able to grind practically to full capacity, and other causes. When the full figures are out it is altogether likely 1918 will fall far short of 1916 and 1917, although it will probably equal 1915.

In my experience groundwood mills are very much hampered by the fact that there is no recognized system of testing pulp. I understand the Technical Section have this matter under consideration, and I can only urge that they arrive at a decision with the least possible delay. I take it for granted that the Canadian method will be co-ordinated with the American.

Comparative Record of Importation of Groundwood Pulp Into U. S.

	1914.	1915.	1916.	1917.	1918.
Jan.	12,095	12,507	14,299	20,976	9,481
Feb.	10,033	10,386	10,105	12,815	7,861
March	12,730	8,457	11,693	23,065	8,151
April	8,537	9,008	18,028	21,134	12,841
May	12,923	11,460	20,201	28,533	18,794
June	15,719	12,685	24,993	32,702	15,014
July	20,913	16,063	20,999	26,288	18,728
Aug.	24,221	17,079	24,965	31,335	21,249
Sept.	33,020	19,686	27,472	24,308	20,658
Oct.	16,712	19,177	25,274	18,037	18,672
Nov.	21,206	20,959	35,915	18,359	18,586
11 mos.	188,109	157,468	233,944	257,552	170,495
Dec.	29,471	21,065	28,669	21,518	.....
12 mos.	217,580	178,533	262,613	279,070	.....

U. S. Imports, Groundwood:	Tons.
January—November, 1917	257,552
January—November, 1918	170,495
U. S. Imports, Pulpwood:	cords.
January—October, 1917	886,935
January—October, 1918	1,208,202

REPORT OF THE TECHNICAL SECTION.

By JOHN S. BATES, Chairman.

The annual meeting was held in Montreal, January 30-31, 1918, the main feature of the program being a symposium on Canada's natural resources of raw materials for the pulp and paper industry. The eleventh meeting of the Section took place in Toronto on June 6-7, with special attention to technical education. The fall gathering was dispensed with by agreement in view of the war situation. The Council held three meetings and during the year the routine work of the Section was efficiently handled by our worthy secretary, Mr. A. L. Dawe. The Hawkesbury Branch has held frequent meetings and has also operated a night school.

The spirit of a voluntary organization can be gauged fairly well by the work of committees. Some of our committee chairmen and members are doing valuable service to the industry in this way and are leaders in progress to an extent not yet realized by the Association at large.

The Committee on Abstracts and Publications (J. N. Stephenson, Chairman), has run a Technical Section page in the Pulp and Paper Magazine and has made the abstracting of literature a success. A volume of proceedings is now presented as a record of the past four years. Special thanks are due to the publishers of the Pulp and Paper Magazine for their generosity and assistance.

The Committee on Education (T. L. Crossley, Chairman), has worked out a concrete plan to give promising men in the mills a chance to learn and develop. An International Committee on Text Books with Mr. George Carruthers as Chairman is ready to prepare monographs on paper-making suitable for correspondence courses. The plan is the result of thorough consideration and hard work on the part of various members with long experience in technical education. The Association now has an opportunity to make the plan a reality and there will be no mistake in supporting such a fundamental movement.

The Committee on Standards (R. W. Hovey, Acting Chairman), has submitted a number of analytical methods for trial in the mills.

The Committee on Testing Moisture in Pulp (E. B. Slack, Chairman), has investigated certain methods and is making recommendations to the trade.

The Committee on Samples (A. L. Dawe, Chairman), is withholding action until there is an opportunity to collect European samples of pulp and paper.

The Committee on Statistics (S. L. Burns, Chairman), has done excellent work in preparing further charts and tables in direct co-operation with the Bureau of Statistics and the whole industry will have the benefit in the forthcoming bulletin on pulp and paper statistics.

The Committee on Mechanical Standards (John Stadler, Chairman), has laid plans for working up specifications covering the more important machinery and materials used in the industry as suggestions to the mills.

The Committee on Programs (Olivier Rolland, Chairman), has looked after the meetings during the year.

Membership has been affected by the war, there having been nine resignations and five retirements by enlistment during the year. Eleven new members have been elected, making a net membership of 102.

The technical men are ready to take their vital place in reconstruction and development. Quality of product and efficiency of manufacture will be the basis of progress.

REPORT OF THE WOODLANDS SECTION.

By GERARD W. POWER, Chairman.

Although the youngest member of the family this Section is growing rapidly and has now 43 members representing the largest operators in the country.

The objects of the Woodlands Section may be found in the resolution brought forward at the Annual Meeting of the C. P. & P. A. two years ago.

"Resolved that there should be promoted a new section of this Association somewhat similar to the Technical Section to deal with the whole question of the production of wood for the making of pulp and paper."

The first general meeting was held in February, 1918, jointly with meetings of the various Protective Associations and also the Canadian Forestry Association, and we have been fortunate this year in having the same arrangements.

The only meeting held during the year was the Fall Conference which was held in Montreal on 20th September, 1918, and which was well attended by representatives from all over the country.

Much discussion took place of a constructive nature and the opportunity was taken to formulate several resolutions to the Government and to appoint committees for special work.

One resolution which was sent to the Government's officials at Ottawa read as follows:

"Resolved that this meeting desires to express its appreciation of the good work that has been carried out by Mr. Swaine of the Entomological Branch in connection with his researches in conjunction with the Conservation Commission. The research work in the destruction of woods by insects is of the most valuable nature to Canada and in the opinion of the Woodlands Section of the Canadian Pulp and Paper Association should be heartily supported.

"Be it further resolved that the Government be urged to give similar consideration to the question of the fungus diseases that are attacking our trees in all parts of Canada since as much as 60 per cent or 70 per cent of Balsam is affected with heart-rot, applying equally to freehold as well as Crown lands. It appears to the Woodlands Section to be a matter that should receive immediate and careful attention from the necessary departments."

A reply was received on 30th November, 1918, from the Forestry Branch at Ottawa which says in part:

"Before the war the Forestry Branch worked out a broad general plan for carrying on field investigations of silvicultural problems, which would include the study of the effects of fungi. An advisory committee was appointed to assist in the direction of this work and particularly to co-ordinate all the scientific investigative work of this kind that might be done by any of the forestry organizations in the country. It was not possible, however, to arrange the practical development of this scheme on a very comprehensive scale on account of the loss of technical men due to the war. Consequently just at the present moment I do not feel that we are in a position to give direct assistance in the investigation that you refer to, but it is hoped to organize this work on a permanent basis as soon as possible.

"Even if it were possible to arrange for this work to be undertaken at the present time by the staff of the Forest Products Laboratories, it would only be a temporary arrangement. It would involve considerable loss of effort as it would be necessary for the men of that staff to undertake a laborious preparation, only to drop the work later on when the permanent scheme is gone ahead with."

A committee composed of Messrs. E. Wilson, Grogan, Volkmar, and W. G. Power was appointed to confer with the Technical Section on the ways and means of utilizing hard woods.

A Committee consisting of Messrs. E. Wilson, J. M. Dalton, P. W. Buchanan, M. R. Kane and R. F. Kenny was also appointed to investigate logging conditions and to report back to the annual meeting. This report has been brought before the Woodlands Section and should lead to improved conditions.

The encouragement and support received by the Section leads the council to expect wider interest in the coming year.

REPORT OF THE SECRETARY-TREASURER.

By A. L. DAWE.

In submitting for your approval the financial statement for the year ending 31st January, 1919, may I express my gratitude to the members for their whole-hearted co-operation in the various undertakings of the year.

A continued spirit of co-operation will be all that

is necessary to tide us over the period of transition, since our industry is equally to the fore in times of peace as well as of war.

I find on referring to the production statistics of some 20 mills who report each month to the Association that their total stocks on hand on December 31, 1918, were 2,953 tons, as against 4,364 on Jan. 1, 1918.

The export business of these 20 mills was 20,000 tons, or 12.4 per cent. of the total production of 160,416 tons.

THE MARKET AS SEEN BY U. S. PUBLISHERS.

The Committee on Paper of the American Newspaper Publishers' Association have sent out a bulletin which contains the following remarks on production, consumption and stocks of newsprint and on new mill construction:-

The past few weeks have shown a decided reaction in the general pulp and paper market. In most lines of paper, other than newsprint, business is hard to get and little buying is reported, with the result that prices are softening. Board has taken a tremendous slump with a number of mills closed down on account of a combination of lack of orders, and annual inventory period for both the mills and their customers. This applies also to other grades.

The past few weeks have proved an added testimony to the fact that newsprint paper is the most substantial line in the paper trade, and is not so affected by these periodical slumps. At this time of the year, print consumption has always dropped off substantially and this is reflected in the stock figures. The increase in stocks for the month of December is remarkable, on account of the fact that December is a heavy consuming month, and while the total stocks on hand have increased, it shows that consumption in relation to production must have been favorable to the consumer for such a month. In addition to this, a number of mills were affected by influenza and production was off according to reports for December. Consumption must have been below what was expected for this month due to decreasing circulations on account of declining interest in the war news, and the tendency toward reduction in news columns. Advertising, however, was reported to be a little above last year so that the decrease in consumption may be attributed almost entirely to circulation.

We may therefore expect the month of January to show a further increase in stocks, unless something unforeseen develops before the end of the month. Some mills are still having difficulty with their production, but consumption will drop off during January.

Stocks on hand at the mills as reported here are much below usual. This is probably accounted for in the difference in selling methods and the fact that transportation has been better recently than during a similar period last year when weather conditions were more severe.

Encouraging reports come in regarding new production. Price Bros. & Company's fifth machine is definitely ordered. Abitibi are making plans now toward financing for extensions. International are making inquiries for machinery for their Three Rivers mill which has long been contemplated, and which was held up, according to Mr. Dodge, on account of the tremendous increase in the cost of material and construction. There are also a number of people who have had mills partly organized for some time and were delayed on account of the war situation and will now be able to mature their

plans, and during the Summer of 1919 we may expect a moderate amount of new construction which will go a considerable way toward relieving the present shortage.

Men in the paper trade most closely in touch with the trade claim there is now a shortage of 1,000 tons a day in newsprint paper, which could be marketed at approximately pre-war prices without softening the market, and this would be absorbed partly by domestic trade and partly by the insistent export demand. The public are now in a receptive mood toward pulp and paper issues, having become familiar with the tremendous profits earned by these companies during the past few years on account of the publicity given these industries by Government investigations both here and in Canada. These profits are still being maintained and costs, according to Government reports, are decreasing rather than increasing while prices remain firm and probably will not drop for some time on account of their pronounced shortage.

The present figure of over 300,000 of stocks on hand must not be construed as meaning that there is a surplus production; compared to former figures available which were gathered by the Newsprint Manufacturers' Association, and which only gave the figures of their own members, and not of the full manufacturing industry, and did not give figures other than mill stocks, taking no account of stocks in transit, and in the hands of consumers and jobbers. The figures now reported therefore are probably sub-normal except for stocks held by daily publishers who are inclined recently to hold larger stocks than previously.

In an article on "Canada and Platinum" the Financial Times refers to the State of Columbia, U. S., where is it, F. T.?

BLEACHING EFFICIENCY OF DIFFERENT BLEACHES.

To a correspondent who inquired if liquid chlorine was more effective as a bleaching agent than chloride of lime, the "Color Trade Journal" replied as follows:

If composed with respect to the amount of "active chlorine", it has been found in practice that solutions of sodium hypochlorite prepared with liquid chlorine are about twice as efficient as solutions of bleaching powder. That is to say, a solution of sodium hypochlorite prepared from liquid chlorine showing a content of 1 gram of "available chlorine" per liter will have about the same bleaching efficiency as a solution of bleaching powder (chloride of lime) showing a content of 2 grams of "available chlorine" per liter.

The same increase in bleaching efficiency is also shown by solutions of sodium hypochlorite prepared by the electrolytic cell; that is to say, in those cells where the hypochlorite bleaching liquor is directly prepared.

Much discussion has been had as to the cause of the increased bleaching efficiency of these solutions of sodium hypochlorite prepared from either liquid chlorine or from the electrolytic cell. It is probably due to the higher oxidizing velocity of the sodium compound as compared with the lime compound in bleaching powder, for about the same effect is obtained if instead of using the chloride of lime solution directly, it is first converted into sodium hypochlorite by treatment with the proper amount of soda ash and removal of the precipitated carbonate of lime.

FORTY-SECOND MEETING OF A. P. & P. A.

What was probably the largest convention the paper industry has ever known, was held at the Waldorf-Astoria, New York, from February 3 to 6. It is estimated that more than 5,000 paper men from all parts of the country attended this convention, and both manufacturers and jobbers were well represented. This year the trade is confronted with problems, the like of which it has never been called upon to face before, and possible solutions to these problems were discussed in general and group meetings.

The meetings of the American Paper and Pulp Association were held jointly with meetings of the National Paper Trade Association, and the Technical Association of the Pulp and Paper Industry.

One of the most important topics discussed at the meetings under the Webb law for the development of foreign markets. There is a large market for American paper in foreign countries at present, and convention was the formation of export combination-large shipments of paper are being made almost daily to South America, Europe and the Orient. The movement to form these combinations has already gained great momentum in the trade, and it is thought that definite steps toward organization will result from the discussions at the convention. There is no doubt that the formation of such combinations will greatly extend trade, but it was not definitely decided whether a single combination, representing the various groups would be most advantageous.

The program of the convention was so arranged as to permit the various groups to hold their meetings on different days. Thus on the first day the meetings of the Waxed Paper Manufacturers' Association, the Executive Committee of the Technical Association, and Writing and Cover Associations, held their meetings. On the second day meetings of the Tissue Paper Manufacturers' Association, the Pulp Manufacturers' Association, the Glazed and Fancy Paper Manufacturers' Association, the Miscellaneous Pulp and Paper Board Specialties' Association, the Cover Paper Manufacturers' Association, the Tag and Document Manila Manufacturers' Association, the Vegetable Parchment Manufacturers' Association, and the Tissue Paper Manufacturers' Association were held. On the third day meetings were held by the Writing Paper Manufacturers' Association, the Gummed Paper Manufacturers' Association, the Wrapping Paper Manufacturers' Service Bureau, the Card Board Manufacturers' Association, the Board Division, and the Sulphite Bond Division. On the fourth day the general business meeting of the American Paper and Pulp Association, and meetings of the Binders Board Manufacturers' Association, and the Executive Council of the American Paper and Pulp Association was held.

In addition to these group meetings a most interesting convention of the Technical Association of the Pulp and Paper Industry was held. The aid rendered to the Government by this organization, is well illustrated by the report of the War Service Committee, composed of H. P. Carruth, chairman, H. E. Fletcher, G. E. Williamson, Raymond S. Hatch, Thomas J. Keenan, and F. C. Clark. This committee, acting upon the request of the Government, conducted a campaign among the mills, with more or less success, to get them to recover sulphite turpentine. This committee also co-operated with the Pulp and

Paper Division of the War Industries Board, in arranging to meet the need for bleaching powder and chlorine. The committee made a study of the situation, and found out that an excessive quantity of bleach was being used, to make certain kinds of paper more attractive. The committee then concluded that papers such as waxing, bags, toilet, dark covers, hanging, vegetable and imitation parchment, etc., would be just as serviceable and just as salable, if no bleach were used. In fact, it was proved that only two or three grades of paper on the market required the use of bleach in their production. A plan was then devised, whereby 75 per cent of the bleach used would have been saved, had necessity arisen, as well as many tons of cellulose, which is now destroyed in the bleaching process. The signing of the armistice of course, made these drastic measures unnecessary, but it is estimated that had the plans been carried out, the industry could have approximately \$14,000,000 annually. Other features of the program of the Technical Association included symposiums on by-products of the pulp and paper industry, problems of heat, light and power, and the annual dinner which was held at the Hotel Astor on Tuesday night, February 4. At the annual business meeting the following officers were elected for the coming year: Raymond S. Hatch, president; L. M. Alexander, of the Nekosa-Edwards Paper Co., vice-president; and T. J. Keenan, secretary and treasurer.

Among the most important decisions reached in the group meetings were those in respect to sizes, quantities and colorings of book papers. It was decided that all papers for books should be sold on a basis of 100 sheets, sizes of the sheets to be as follows: 20 1-2 by 24 3-4, 22 1-2 by 28 1-2 and 25 1-2 by 30 1-2. Any other than these stock sizes must be sold in quantities of not less than one ton in regular colors, thickness to be .007 1-2 gauge, .009 1-2 gauge, .011 1-2 gauge, and .014 1-2 gauge. It was also decided that there should be no restrictions placed on the number of colors. The color shall be established by the individual mill. It was furthermore decided that special colors shall not be manufactured in lots of less than five tons.

At the general meeting of the American Paper and Pulp Association, which was held on Thursday morning in the Myrtle room of the Hotel, an interesting program was given. The meeting was called to order promptly at ten o'clock by President George W. Sisson, Jr., after which the minutes of the last meeting were read, also the annual reports of the secretary and of the treasurer, by Mr. L. B. Steward.

When this report had been concluded, Mr. Sisson read his annual address, in which he spoke of plans for more firmly consolidating the organization of pulp and paper makers. G. S. Williamson then explained briefly the plan of the technical men of Canada, and the United States for a real text book for the industry. When Mr. Williamson had concluded his address, M. E. Marcuse, chairman of the committee on resolutions, read a list of fifteen resolutions which the committee had drawn up. All the resolutions were accepted by a unanimous vote of the association.

The chairman of the nominating committee then made his report, and the officers for the coming year as chosen by this committee were elected unanimously, by the Association. These officers are as follows. President George W. Sisson, Jr., of the Rae-

quette River Pulp and Paper Co., Potsdam, New York. Western Vice-President, Arthur H. Nevius, of the Miami Paper Company of West Carrollton, Ohio. Eastern Vice-President, F. L. Stevens, of Stevens & Thompson Paper Company, North Hoosick, New York. Secretary-Treasurer, L. B. Steward, 18 E. 41 Street, New York City.

With the exception of Mr. Nevius, who succeeds L. M. Alexander, of the Nekoosa-Edwards Paper Company, Port Edwards, Wisconsin, these officers are the same as those of last year.

Perhaps the most enjoyable part of the whole convention were the various dinners which were given in connection with the affair. On Tuesday night the dinners of the Technical Association and the Tissue Paper Manufacturers' Association were held. On Wednesday night the dinners of the National Paper Trade Association, and The National Association of Waste Material Dealers were held. On Thursday night the banquet of the American Paper and Pulp Association was held. At all of these dinners interesting speakers appeared who delivered talks on subjects of interest to those in the trade.

WINDING PAPER TO SUIT THE SALESMAN.

Paper makers and salesmen will be interested in the following discussion by the Cameron Machine Co. of the relation between the furnishing room and the sales department.

The Sales Department in a paper mill is naturally anxious to write up all the orders they can for the mill they represent, and it is not unheard of for a sales manager to put the gloves on with the boss papermaker or the finishing room boss when an order is turned down through the inability of the mill to turn out paper in the particular size or character of roll which the customer wants.

When the mill product is sold many months ahead, the manager is usually as independent as a Washington hotel owner in war times, so that when the salesman comes along with an order for "freak sizes" of roll, he is usually told to take his order and depart thence toward the regions of eternal summer, and then some more.

The reason for prejudice in the average mill against "freak sizes" or kind of roll out of the ordinary, and for that matter, prejudice against any kind of rolls at all, is that the production of paper in roll form is recorded as a troublesome proposition by the average finishing room boss. Some mills carry it to the extreme in trying to abandon roll production altogether and encourage orders for flat stock, discouraging orders for their product in any form of roll—big or little, especially if the rolls have to be produced in an exacting and careful manner.

The average finishing room boss has a feeling that something sour is going to happen to him when he is faced with an order for fussy sizes and kinds of rolls, and when he looks over the average equipment in the average mill by which roll paper is supposed to be produced there is no room for surprise at the feelings of the "super" or his foreman.

Altogether too little study and technical experience has been given to the problems of slitting and re-winding.

The Cameron organization has devoted itself strictly to slitting and re-winding of various kinds of materials, including, of course, all kinds of paper,

and the fact that they have developed to a point where they employ upwards of 200 men and usually working day and night shifts, proves that there was a real need for a business of this type and also that their product must have won its way to the front, both here and in the countries over the seas.

A rewinder which they brought out in the middle of 1917 known as Type 8, Model 10, has proved highly useful, especially in the paper mill finishing rooms.

It is called a Universal Type Machine, as it is used to convert any kind of paper made from the lightest tissue to bag stock and box-board, into rolls of any size which might be required, from tiny little mid-get rolls to great big jumbo rolls, provided the latter does not exceed 36" in diameter.

Where the requirements have been the most exacting as to the fussy needs of the customer for small rolls such as hand rolls, etc., produced out of a wide roll, for instance 72" wide, or where a customer has required rolls of large diameter, but very narrow widths, as for instance in the production of paper containers, the machine has proved its title to its name "Universal."

SAFETYGRAMS.

Make repairs before, not after, accidents occur.

Safety should be the first consideration of every employee.

Don't try to operate a machine which you don't understand.

Recklessness is no indication of courage; brave men are always cautious.

A place for everything and everything in its place, helps to reduce accidents.

Every workman has his own duties to perform, but the most important of these is to prevent injury to himself and others.

It is as much your duty to prevent accidents to yourself and fellow-workmen as to do any other part of your work.

Team work, with every man interested, will do more than anything else to prevent accidents—SAFETY COMES FIRST. When in doubt, take the safe course.

A disorderly work-shop contributes to the number of accidents. Do not leave waste material or refuse lying around; safe places are provided for storing it; help to keep the premises clean.

Remember that on your care and watchfulness and that of your fellow-workers depend not only your safety and theirs, but also the future comfort and happiness of your family. Your safety and their is of much more importance than anything else.

THINK IT OVER.

Are you making any special effort to improve each day?

Are you advancing along your line of work, growing into a bigger one?

Do you work while you work and play while you play, or do you carry your social gaieties and happenings into your work of the next day, and so slight the duties of the office or home?

Are you anxiously awaiting the hour when you may quit and go home to prepare an evening's amusement?

BURN WASTE TO PROTECT FORESTS

The question of the disposal of the slash or débris from lumber operations so as to diminish the risks from forest fires was the main problem attacked at the Forestry Conference last week. The session was held under the joint auspices of the Quebec Forest Protective Association and the Woodlands Section of the Canadian Pulp and Paper Association, with Ellwood Wilson in the chair. After the several papers prepared on the subject of slash disposal had been heard and discussed a resolution was passed recommending the appointment by the chairman of a committee to make experiments in slash burning to find out the costs of the operation under differing circumstances.

The opening address Thursday morning was delivered by Hon. Jules Allard, Minister of Lands and Forests in Quebec, who set forth what had been done by the Quebec Government in the work of forest fire prevention.

Brig.-General J. B. White, D. S. O., who was in charge of the Canadian Forestry operations in France said that the time had come for Canada to assume the business of tree-planting in earnest. He spoke of the demands that the war had made upon forestry and the consequent lessening of forest resources, and dwelt on the way in which the Germans had destroyed the ancient forests of France.

Turning to Canada, General White said that it would take many generations before the Canadian forests could ever attain to the state of perfection reached by those in the old world.

Plant Trees.

He then dealt with the problem of reinstating the returned men, many of whom, he said, would come back gassed and unfit to undertake the burdens of life. He suggested that lumbermen should take as many as want to go and let them plant trees when they are able, and when they are not able to, let them sit out in the sunshine and rest. This, he said, would be doing a wonderful work both for Canada and for the men themselves; while every dollar spent in this way would bring to Canada many dollars in return.

Dr. Fiske, of the Life Extension Institute of New York, explaining that he too was interested in conservation of human life instead of the conservation of tree life, gave some information regarding the advances made in combatting old age, which dreaded enemy, he assured his hearers, began his impairing work even at the age of twelve years.

The necessity for slash burning as a fire protective measure was dealt with in a paper prepared by Ellwood Wilson and read by Clyde Leavitt, chief forester of the Commission of Conservation.

T. W. Dwight, assistant to the director of forestry, Ottawa, also gave a paper advocating slash disposal and J. M. Swaine, entomological department, Ottawa, dealt with the subject of various insect injuries to the forests.

In the discussion which followed objection were made by members who designated themselves as practical lumbermen to what they deemed rather theoretical and visionary ideas, a number of them claiming that the subject of costs in the matter of slash disposal had not been satisfactorily dealt with and others arguing that the burning of debris sometimes injured the growth of the young trees. A resolution was passed appointing the following committee to experiment on the subject and present their results at next year's conference:

August McLean, R. P. Kerman, of the Donnacona Paper Co.; Brig.-Gen. White, of the Riordon Paper Co.; Gerard Power, of the Power Lumber Co.; Mr. Black of the J. R. Booth Lumber Co., and F. C. Whitman.

At the afternoon meeting an address was given by Lieut. H. Lewis, of the Royal Air Force, who spoke on the possibilities of using airplanes for observation work in connection with lumbering operations and the preservation of our forests. He spoke of the wonderful work that had been achieved by the air force in observing the enemy lines, and talked of the possibility of using such air service for not only observing the Canadian forests, but photographing them so as to give complete and accurate records.

Following this Lieut. Lewis gave a series of photographs taken by airplanes over the enemy trenches in France and Flanders. Many of these photographs were taken by stereoscopic cameras from a height of 10,000 or more feet, but the details of the ground shown were singularly complete.

The meeting was then turned over to Gerard Power, as president of the Woodland Section of the Canadian Pulp and Paper Association, when addresses were given by Mr. Ellwood Wilson, on logging operations with a report on this work. On suggestion of the president it was decided to refer this report back for further consideration which idea was unanimously adopted.

The following officers were elected by the Woodlands Section: Chairman, Robert P. Kerman, of the Donnacona Co., Quebec; vice-chairman, Marshall P. Small, of the Laurentide Co., Grand'Mère; councillors, R. F. Kenney, Buckingham; A. J. Price, Quebec, and Ellwood Wilson, of the Laurentide Paper Co., Grand'Mère.

Forestry meetings were also held on Wednesday and on Wednesday night the annual dinner of the Canadian Association of Forest Engineers. Addresses were made by Ellwood Wilson, Dr. Howe, F. J. Campbell, Jas. White, Wm. Milen of the Forestry Branch, Prof. E. J. McCarthy of Syracuse and others.

DU PONTS MAY MAKE PAPER.

The Du Pont Powder interests, at Wilmington, Del., are making a study of paper manufacturing with a view to utilizing, if possible, some of the military plants' equipment, which is now useless for its original purposes. The study does not include news-print.

A paper bag department has been added to the plant of the Cushman Paper Company of Augusta, Maine. Thirteen machines have been installed and more are to follow. The capacity of one of these machines is 72,000 bags a day, ranging in sizes from 10 pounds to one-fourth barrel, and using from two to six tons of paper. It is estimated that all thirteen machines can be made to turn out about 2,500,000 bags a day. The cost of a single machine, including its installation is approximately \$50,000.

It is stated that the American syndicate associated with the Royal Securities Corporation in the purchase of the new \$4,000,000 10 year mortgage bonds of the Riordon Pulp and Paper Co., has sold its entire participation privately. The portion to be placed in Canada is now being underwritten and a public offering may be made shortly.

MUCH WATER POWER DEVELOPED BY PULP AND PAPER MILLS.

A census of the developed water power in the Dominion just completed by the Dominion Water Power Branch, in co-operation with the Dominion Census Bureau, discloses exceptionally interesting figures. The water power resources of Canada, with their strategic locations adjacent to practically every industrial centre, constitute one of our greatest assets, and it is satisfactory to note that the economic advantages accruing from utilization of these powers for industrial purposes is being fully realized in practice.

The accompanying table analyzes the installed turbine or water-wheel capacity of the Dominion by Provinces, and by use of power. The returns indicate a total developed water power capacity of 2,305,310 horse power. This figure is several hundred thousand in excess of any estimate previously published and indicates that Canada's utilization of hydro power is even more marked than had been realized.

Of the total water power developed, 1,727,471 horse power is installed in central electrical stations, that is, stations developing electrical energy for distribution and sale; 352,214 horse power is installed in plants owned and operated by pulp and paper companies, and 225,625 horse power is installed in other miscellaneous manufacturing and general industrial establishments. The foregoing figures for pulp and paper companies does not, however, represent the total amount of water power used in that industry: upwards of 100,000 hydro electric horse power in addition, is purchased by pulp and paper companies from central electrical stations, making the total hydro power utilized in pulp and paper industry some 450,000 horse power. If this 100,000 h.p. is added to Column 2, it should be subtracted from Column 1 to maintain the correct tabular totals.

Returning to the central electrical station total of 1,727,471 horse power, it is of interest to record that the central stations already constructed throughout the Dominion are designed for a machine installation of 530,000 horse power in addition to the machine

ery now installed. Of this amount, the installation of some 270,000 horse power is at the present time under contemplation in various parts of the Dominion. These figures do not include the 300,000 horse power Queenstown plant which the Hydraulic Power Commission of Ontario has under construction at Niagara.

Column 5 of the table discloses interesting figures respecting the hydro power development in the various Provinces on a per capita basis. In the Yukon the hydro power developed per thousand population totals 1,574 horse power, in British Columbia 506 horse power, in Quebec 376 horse power, in Ontario 359 horse power, and in Manitoba 133 horse power. The other Provinces average smaller figures. The ratio for the entire Dominion averages 276 horse power developed, per thousand population. The availability of hydro power, the distribution, density and occupation of the population have a very direct bearing upon the amount of power developed. The exceptionally high ratio in the Yukon is accounted for by extensive use of hydro power in the mining industry in conjunction with the comparatively small population.

The per capita figures of hydro power developed for the Dominion, when compared with similar figures for other countries, are indicative of the advanced position which this country takes both in the extent and in the utilization of its water power resources. Norway and possibly Sweden are the only countries where the per capita utilization of water power exceeds that of Canada. The most recent figures available for the United States would indicate a utilization of less than 100 hydraulic horse power per thousand population, as compared with 276 per thousand in Canada. The fundamental reason underlying the extensive use of water power in Canada is the fact that practically every commercial centre from coast to coast, excepting only a few in the middle Prairie Provinces, have abundance of water power available, not only for present needs, but for all anticipated requirements.

Distribution of developed water power in Canada by provinces and by use of power, Jan. 1, 1918. Figures represent installed turbine horse power.

	†Central Electric Stations.	*Pulp & Paper	Other Industries	Total	H.P. per 1,000 population.
	H.P. 1	H.P. 2	H.P. 3	H.P. 4	5
Yukon	10,000	.....	3,392	13,392	1,574
Alta.	32,580	.....	300	32,880	63
B. C.	221,625	46,450	44,348	312,423	506
Sask. . . . .	.....	.....	.....	.....	.....
Man.	64,100	.....	12,072	76,172	133
Ont.	791,163	133,952	59,945	985,060	359
Que.	597,601	153,512	89,648	842,761	376
N. B.	6,878	2,800	5,191	14,869	41
N. S.	3,354	13,500	9,170	26,024	51
P. E. I.	170	.....	1,559	1,729	19
	1,727,471	352,214	225,625	2,305,310	276

†Column one includes only hydro-electric stations which develop electrical power for sale.

*Column two includes only the water power owned by pulp and paper companies. In addition to this total, upwards of 100,000 hydro-electric horse power is purchased by pulp and paper companies, mainly from the central electric stations included in column one. The hydraulic power utilized in the pulp and paper industry of Canada therefore totals to 450,000 horse power.



UNITED STATES NOTES

At a meeting held at the India House in New York last week representative American dye manufacturers took the initial step toward bringing to the attention of the Alien Property Custodian the desire of the American chemical manufacturers that patents for German dyes be sold to a non-profit making pool of chemical producers, so that no one concern may secure a monopoly. The plan of the chemical manufacturers is to make the pool a holding company with the power to license any manufacturer of dyes who desires to make the colors for which the Alien Property Custodian now holds the patents, and which up to a short time ago were in the custody of the Federal Trade Commission. Among those who attended the meeting were representatives of the General Chemical Company, DuPont Chemical Company, Merrimac Chemical Company, National Aniline and Chemical Company and the Grasselli Chemical Company.

The Continental Paper Bag Company has just declared its 74th consecutive preferred stock dividend, and its 54th consecutive common stock dividend. Quarterly dividends of 1½ per cent., payable February 15th, have been declared for both.

The Watervliet Paper Company announces through its president, William M. Loveland, that if satisfactory deliveries of needed equipment can be secured, a second machine is to be installed in the Watervliet plant in Michigan during the year. Very little construction work will be necessary to make this addition as the buildings were originally designed to accommodate two machines.

The State Pulp and Paper Company of Manhattan has recently filed incorporation papers at Albany. The concern is capitalized at \$50,000, and G. C. Kallo, M. N. MacDonald, and J. J. Griffin, of 30 Broad St., New York City, are the incorporators.

Members of the United States Tariff Commission express regret at the slow return of questionnaires sent to the dye manufacturers and users in the United States. Only 67 replies are said to have been returned out of 267 requests mailed. The information sought in confidence is believed to have an important bearing on tariff regulations, duties and the proposed amendment to the present act.

The National Pulp Company, capital \$150,000, has been granted a charter at Dover, Delaware. M. L. Horty, S. L. Mackay, and M. C. Kelly, all of Wilmington, are the officers of the new concern.

The Illinois Envelope Company has elected the following officers and directors for the year:—Directors, Noah Bryant, Frank H. Milham, W. B. Milham, C. E. McKinstrey, Vernon T. Barker, Charles Clarage, and A. Van Bochove; president, W. B. Milham; vice-president, V. T. Baker, secretary-treasurer and general manager, C. E. McKinstrey.

The annual meeting of the Folding Box Manufacturers' National Association is being held this Tuesday (Feb. 11), at the Hotel Astor. All folding box manufacturers or representatives of plants holding folding box departments, whether they are members of the association or not, have been invited to attend

the meeting. Non-members are to be free to express themselves on any industrial problem that may be brought forward for consideration, and they are in no way incurring any obligations by attending the meeting. Questionnaires have been recently sent out to folding box manufacturers by the secretary of the association, whereby it is sought to obtain a survey of the industry. A tabulation of the returns on this questionnaire will be disclosed at the meeting.

The Harland Card and Paper Company of New York has increased its capital from \$7,500 to \$60,000.

Paper exporters feel that there is nothing in the present cost of making paper to warrant any noticeable reduction in prices. Foreign buyers seem to realize this, and it now appears that quite a number of orders cancelled by South American, Japanese and other foreign buyers during the first flurry of excitement following the armistice have lately been reinstated. This has produced a much better feeling in the trade, and increasing purchasing activity is expected from now on, with prices at least maintaining their present levels. Most of the mills have about six months' supply of pulp on hand bought at the high prices prevailing during the recent past. Labor costs are not decreasing, and the mills are not inclined to take on cheaper labor, even if it were possible, so long as living costs remain where they are now. With Sweden shipping large quantities of her pulp to England in exchange for coal, and her finished paper to Australia for food, and with Germany and Austria pretty well out of it for some years, Canada and the United States are expected to be the only large producers of paper for export for a considerable time to come.

NORTH AMERICAN PULP & PAPER CO.

It is stated that the new interests that came into the company a year ago have now control of considerably more stock, possibly by purchase. At any rate, the return of Mr. Dubuc from England has been a signal for a better demand for the stock. The Chandler mill is now completely equipped and the other mills in good condition. It is expected that some changes in the executive will soon be announced.

The construction of a big paper mill has been started at Machyon Dong, near New Wiju, Chosen (Korea), by the Mitsui firm, of Tokyo. Altogether 120,000 tsubo of land will be used as site for the factory, and a great embankment for protecting the ground from inundation by the Yalu is in course of construction. The mill, when completed, will first undertake the manufacture of pulp from material gathered in the Yalu forests.

Imitation parchment can be made perfectly ink-proof and grease-proof without any sizing. Owing to the omission of the size the fouling of the wires and felts and adherence to the press-rolls is diminished.

Technical Section

Of the Canadian Pulp and Paper Association

REVIEW OF RECENT LITERATURE.

A-3. Nature of the cellulose of cereal straw; II. E. Henser and A. Haug. *Z. angew. Chem.*, 1918, **31**, 166-168, 172-176. *From J. Soc. Chem. Ind.*, in which reference is made to its p. 365 A. (1918). The crude cellulose prepared by the chlorination method with the use of caustic soda (*loc. cit.*) contained only 0.35 per cent of ash, whereas that prepared with the use of sodium sulphite contained 1.1 per cent. The yield was 51.60 per cent of crude cellulose with furfural value 13.30 per cent., equivalent to 22.34 per cent of xylan. Hence the calculated yield of true cellulose was 42.97 per cent. The original straw had furfural value 15.4, equivalent to 25.62 per cent of xylan on the dry and ash-free basis; thus 47.32 per cent of the original xylan remained in the cellulose. The proportion of xylan remaining in the cellulose varies inversely as the yield of cellulose and is a function of the concentration of the caustic soda solution used for extracting the chlorinated products. For instance the furfural value of 13.3 was found when a 1 per cent solution of caustic soda was employed; with a 2 per cent solution the furfural value of the crude cellulose fell to 10.4, and with a 3 per cent solution to 9.3. The furfural value of commercial straw cellulose also varies with the yield and with the severity of the chemical treatment; it may reach 18 per cent. Most of the xylan may be removed from the crude straw cellulose preparations by repeated extraction with 6 per cent caustic soda solution, but it has not been found possible to reduce the furfural value of the cellulose below 1.95 per cent in this manner. Attempts to remove the whole of the xylan by extraction before chlorination as well as afterwards led to a similar result, and a fully extracted preparation from commercial bleached straw pulp still gave 2.02 per cent of furfural. Commercial bleached straw cellulose shows a "copper value" of 3.0; unbleached straw cellulose on the other hand has a "copper value" of 0.94-0.99, and bleached straw cellulose which has been fully extracted until the furfural value is reduced to the limit of 2.0 per cent shows a "copper value" of only 0.61-0.78. Moreover, by further bleaching and the production of oxycellulose, the "copper value" of this product may be increased to 15.5 without any effect on its furfural value. Hence it is concluded that straw cellulose does not correspond to a special type of "natural oxycellulose," but is an ordinary cellulose similar to that of cotton or wood, strongly contaminated with a pentosan and modified by bleaching under industrial conditions in such a way that the commercial pulp contains a substantial amount of oxycellulose. The only outstanding question is the nature of the residual 2 per cent of furfural which cannot be eliminated by extraction of the purified cellulose. On hydrolysis with 1 per cent sulphuric acid at 135° C. for half an hour, this furfural-yielding residue is divided half in the hydrolysed liquid and half in the hydro-cellulose. An examination of the liquid and

the preparation of the benzoate and osazone, m.pt. 160-180° C., suggested the presence of xylose, and it is probable that the residue in question consists merely of a trace of xylan, equivalent to less than 1 per cent of furfural, which is obstinately retained by the cellulose, whilst 1.0-1.5 per cent of furfural may be attributed to the cellulose itself, just as in the case of cotton cellulose. Hydrolysis with 72 per cent compared with those obtained with pure dextrose, liquid at 120° C. for 2 hours, according to the method of Ost and Wilkening (*J.S.C.I.*, 1910, 688), was carried out on the purified straw cellulose. The results were compared with those obtained with pure dextrose, observations being made of cupric-reducing power, polarisation, yield of alcohol by fermentation, and the m.pt. of the osazone. These were all in close agreement and afforded satisfactory evidence that the resolution of straw cellulose to dextrose is practically complete, and that its constitution corresponds with that of cotton cellulose.—J. F. B.

A-7. The rapid determination of lime. H. J. Smith. *Chemical Analyst* **24**, 12-5 (1918). This method is found very useful in Portland cement work, and may be applied to determination of Ca in other materials. It is necessary that the Ca be rendered soluble in HCl by a proper fusion, if it is not in that state in the original sample. Weigh 0.5 gram sample into a 500 cubic centimeter beaker, and mix thoroughly with 30-40 cubic centimeters hot H₂O. Add 8 cubic centimeters HCl (density 1.19), heat on the hot plate until all the coarser particles are dissolved, then dilute with hot H₂O to about 250 cubic centimeters. Add 7 cubic centimeters glacial acetic acid, and approximately 1.5 grams (NH₄)₂C₂O₄, preferably in form of dry crystals by a small measure. Heat to within 2° or 3° of boiling point, pour in slowly 10 cubic centimeters NH₄OH (density 0.90), boil 1 minute, filter at once and wash 5 times. Transfer the paper and precipitate to the side of the beaker, wash down with hot H₂O, add 10 cubic centimeters H₂SO₄ (1:1) and titrate with standard KMnO₄. (5.64 grams KMnO₄ per l., standardized by CaCO₃, calcite or Na₂C₂O₄; 1 cubic centimeter = 1% Ca on 0.5 gram sample). Three samples of cement clinker, a sample of Portland cement and a sample of limestone examined by this method gave following per cent CaO, respectively: 65.1, 65.0, 63.8, 63.5, 53.6. Corresponding figures obtained by regular separation methods were 65.0, 64.8, 63.8, 63.5 and 53.7.—(Chem. Abs.)

A-18. Method for magnesia. W. P. Eckdahl. *Chemical Analyst* **24**, 20 (1918). Cool the filtrate from the oxalate separation of Ca, add the NaNH₄HPO₄ solution containing 2.5 grams NaOH. The NH₄Cl present is decomposed, and NH₃ liberated. It is stated that precipitation of Mg takes place in about 1 hour, giving results well within possible limits of error.—(Chem. Abs.)

(More Abstracts on page 189.)



The Markets

CANADIAN MARKETS.

Toronto, February 10.—Market conditions generally are unchanged from last week although orders are coming in a little more freely. As stocks get lower more business is being placed and it is believed that before another month passes there will be a resumption of normal conditions. There is a good demand for newsprint paper and it is felt that when the final decision is made by the Appeal Tribunal on the price question there will be no material change from the fig- of \$69 which has prevailed for some months now. Manufacturers are not uneasy regarding the outcome.

The decision of Commissioner Pringle to conduct an investigation into the price of sulphite pulp used in book papers and half tone news was made at the recent hearing in Toronto and the manufacturers of pulp are not uneasy regarding the outcome. They are prepared to show that costs are as high as ever and that the figure for pulpwood is ascending all the while. It will be a year before any reduction in cutting or hauling expenses can be made to apply. The wet fall, the outbreak of influenza, the absence of snow in many camps and the mild weather have all tended to create a short supply and keep up expenses. Until economic conditions alter, there will be no reduction in wages and while there is a limited demand for all kinds of pulp at the present time it is felt that as soon as foreign facilities are afforded any surplus on hand will find an outlet. In the meantime, manufacturers are piling their product and awaiting the outcome with interest.

It has been decided that the pulp being made and on hand is worth so much and there is no disposition to cut the price. If all the producers remain firm it is the conviction that everything will come out all right. In the meantime, book sulphite is quoted from \$90 to \$95 at mill, bleached at \$120 to \$125 and sulphate from \$95 to \$100. One large plant in Quebec making about sixty tons a day of sulphate pulp has closed down for the present and is marking time till conditions change for the better. Another concern has about 2,000 tons piled and awaiting shipment, yet so staunch is its faith in the future of both sulphate

and sulphite that this concern is arranging to add several dryers to its machines and increase the output by twenty per cent. The present lull is only temporary and it is felt that conditions will soon revert to normal.

In groundwood there is no change and the movement of stock is only fair. In the book and writing line orders are coming in fairly well and all mills are busy while toilet and tissue plants are still behind in their deliveries. Board mills are catching up with production and prices are remaining stationary. Printing establishments are doing a nice business and several large manufacturing firms and mail order houses, which during the last year of the war, refrained from sending out printed booklets and catalogues owing to their inability to get certain commodities, are now preparing to do more publicity work than ever.

The fact that the annual conventions of the Canadian and the American Pulp and Paper Associations are now over and representatives of the industry in all lines have been afforded the opportunity of coming together and comparing notes will tend to stabilize conditions and restore confidence. One lesson that manufacturers in Canada have learned from the recent paper investigation and general conditions is that of knowing how to figure costs and reducing management and operation to an efficient and scientific basis. The reports to hand indicate that mills will proceed carefully and adopt a policy of watchful waiting. In the meantime, stocks with large consumers and paper distributors are getting low and orders cannot much longer be withheld. Paper and pulp will be needed as much as ever, and the disposition to hang back in the hope that prices will fall, will gradually disappear if the manufacturers who have decided that they will not make paper and pulp and sell it below a fair reasonable figure, adhere to their determination.

All things point to a large export trade. Ocean carriage rates are coming down all the while and inquiries from abroad continue to arrive in encouraging number. Just as during the period of the war conditions had to be faced such as were never encountered before and will never be met again and were eventually over-

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come successfully, so too, it is felt, will the reconstruction and readjustment period be surmounted, if faith is not broken or confidence lost. Jobbers on the other hand, contend that mills have been getting far too much for their product of late, but the latter think differently, and thus between the two schools of thought there is quite a difference of opinion which only time and conditions will reconcile. Paper manufacturers are taking on fresh courage as they believe that the end of governmental regulation, inquiry and supervision is nearly at an end and that sooner than most companies expect, the law of supply and demand will again prevail.

In the rag market, comparative quietness is reported. As mills are not receiving heavy orders they are backward about loading up with supplies and thus all branches of the trade are affected. Before the termination of the present month it is expected that spring business will set in in earnest and that all doubt and anxiety with respect to the future be dispelled. It has been stated that the railways contemplate another increase in freight rates and will make application to this end in the near future. This move will be strongly opposed by the pulp and paper companies and lumber manufacturers who feel that the limit has already been reached in the matter of carriage charges.

NEW YORK MARKETS.

New York, February 8.—Convention Week witnessed little change in the general conditions surrounding the paper market. The confidence expressed by the great majority of trade factors attending the convention has had the effect of bolstering up the feelings of those who have been prone to take a pessimistic view of the outlook.

Expectations are business will taken on a more active complexion in the near future. It is believed that manufacturers and dealers alike have gained a clearer conception of the probabilities of the future, and that from now on the market will become more and more stabilized and trade activity will be revived on a more nearly normal scale. Jobbers, as is well known, have purposely held off in buying during the last several months in anticipation of lower prices. Most of them have permitted stocks to get down to exceptionally low levels, while placing orders with mills only for goods for which they have an immediate outlet among consumers. It is expected that they will now come into the market to replenish their holdings, and whether or not demand from consuming quarters undergoes expansion, manufacturers look for a period of brisk buying by dealers, which should give renewed confidence to consumers and automatically increase demand from such quarters.

Newsprint is holding its own in price under a moderate movement toward consumers. Demand is more or less of a retail character, buyers absorbing merely small lots required to augment their contract supplies, but on the whole mills are fairly well engaged. Current consumption in this section of the country is below normal. Advertising has fallen off in volume within the last few weeks, and the average newspaper is not printing as many pages as usual at this season. ever, that demand for newsprint is quite active, and Reports from the Middle West are to the effect, how-

it is authoritatively said that the consumption there is well above the production.

Book papers have steadied in price, though there has been no apparent increase in demand. Mills as a rule are shipping moderately large tonnages of their product, and prices are maintained. Coarse papers, on the other hand, are quotably easy and prices have sagged off a bit. Dealers and manufacturers nevertheless are optimistic and look for improvement in demand and a resultant firming of values in the near future.

Possibly the strongest item in the market at present is tissue paper, paradoxical though it seems. Government demand for roll tissue is the chief reason for this, although other buyers are absorbing fair-sized lots of white, manila and other grades of tissue. Prices are firm and the tendency, if anything, is upward. Writing papers are dull and nominally priced. Producers for the most part are maintaining quotations, but there seems little doubt that supplies could be secured in at least some quarters at concessions. Mills are in need of orders and are operating at a low percentage of capacity. Some are closed down entirely, while those running are said to be working on no more than 50 per cent of full production.

No changes have developed in boards. Demand is narrow and mills in both the East and Middle West are operating at light capacity. Prices are maintained at a basis of about \$52.50 per ton for chip board.

Groundwood:—Quietness and easiness continue to be the main characteristics of the groundwood market. Demand from all sources is at a low ebb and grinders are lowering quotations presumably in an effort to stimulate buying. Consumers as a rule display little real interest, irrespective of the figures quoted and the great bulk of business passing is on contract. No. 1 mechanical pulp is being offered with comparative freedom by manufacturers at \$26 to \$27 a ton, air dry basis, f.o.b. pulp mill. Possibly some lots could be purchased for less, although \$26 is the lowest figure mentioned by sellers.

Chemical Pulp:—There is very little stirring in a business way in the chemical pulp market. This condition is rather to be expected when prevailing circumstances are considered. Most paper mills are running at low capacity and generally are able to get along with contract supplies of raw material without having to seek additional lots in the open market. Such sales as are being accomplished involve small quantities of pulp directly needed by consumers or else found available at prices which buyers are not justified in overlooking. Foreign grades are firmly quoted. There is practically no foreign bleached sulphite available on spot, and importers say that 9.00c a pound landed is the lowest figure at which pulp can be brought in under prices ruling on the other side. Foreign unbleached is quotable at 5.75 to 6.00c a pound ex-dock, while foreign easy bleaching sulphite is scarce and firmly held at 6.00 to 6.25c, with Scandinavian kraft quoted at 5.75 to 6.00c on the dock. Quite some business is current in domestic screenings, with sales at between \$35 and \$40 a ton at the pulp mill recorded.

Rags:—The market for rags has been in a more or less lifeless condition during the present week. Demand from manufacturing sources has been unusually light and this has been attributed in a measure to the

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fact that paper mill officials, including purchasing agents, have been absent from their desks while in New York attending the convention. About the only grade that has moved with any show of regularity is repacked thirds and blues. Mills have absorbed moderate amounts of these rags at a price basis of between 3.25 and 3.50c a pound f.o.b. New York, depending on the quality of the packing and the tonnage involved. White rags have been sought only in limited lots and generally at prices which have been unsatisfactory to dealers. Roofing rags have moved slowly and prices have declined. Felt manufacturers in numerous cases have dropped entirely from the market while those evincing willingness to buy have refused to pay prices anywhere near the figures recently secured for roofing stock. Around \$40 f.o.b. shipping point for No. 1 material has been the basis offered by mills, and although some sellers have declined to enter into engagements at the reduced prices, business has passed at the revised quotations.

Old Papers:—Weakness in the low grades has featured the market for waste paper this week. In the absence of demand, prices have steadily declined and now prevail on levels lower than have been reached in a long time. No. 1 mixed paper is selling to mills at 35 to 40c a hundred pounds f.o.b. New York, while folded news is available at 57½c to 60c and container manilas at 55c. Dealers are actively offering out material and there is a great scamper for orders, which situation of course prompts consumers to hold off in buying to an even greater extent than they otherwise would do. Book stock is little sought and quotations on this grade also have sagged. Offers of heavy books and magazines to mills at 1.25 to 1.30c New York have been noted, and there have been few important buyers even at these low prices. Shavings are quiet and nominally quoted. No. 1 hard whites can be bought by manufacturers at 5.40 to 5.50c New York, while soft white shavings of No. 1 quality are available at 4.40c f.o.b. Kraft paper has declined in price, sales to mills being noted at 3c New York.

Bagging and Rope:—There is little improvement to report in the market for scrap bagging and old rope. Consumers are buying in limited volume from day to day as their needs develop, with the aggregate movement of supplies insufficient to have influence on values. No. 1 domestic manila rope is available to mills at 6c per pound New York, while No. 1 scrap bagging is selling at around 2.75c.

NEW JAPANESE PULP MILLS.

The paper pulp industry in Karafuto (Japanese Saghalin) is being developed further, and it is expected that the total annual output of pulp will soon reach 100,000 tons.

The timber resources of the colony are estimated at 300,000,000 shakushime (shaku = 11.93 inches), which can be exploited at the rate of 3,000,000 shakushime a year. If half the amount is used by pulp manufacturers they can turn out pulp to the amount of 100,000 tons a year.

At present, according to the Yokohama Chamber of Commerce Journal, pulp mills there produce only 50,000 tons a year, and there is enough room for further enterprises. This chance is now being taken by two companies.

There are two mills at Toyohara and Otomari which can turn out 20,000 tons a year.

There is also a big mill at Ochiai which can turn out 10,000 tons a year. The concern has already half completed an additional mill at Higashi-Tomotori. Another mill at Tomarji turns out 20,000 tons a year. This last is also erecting a new mill at Maoka. The annual output of pulp at present is valued at 12,000,000 yen, but on the completion of the new mills it will easily be doubled.

WAYAGAMACK ELECTIONS.

The following were re-elected directors of the Wayagamack Pulp & Paper Company at the annual meeting on Tuesday: C. H. Duggan, Alex. Maclaren, Hugh Mackay, K.C.; Jas. W. Pyke, Sir Wm. Price, C. R. Whitehead. At a subsequent meeting of the directors J. R. Whitehead was elected president, and Jas. W. Pyke, vice-president.

Capt. E. H. Kellogg, recently of the U. S. chemical warfare service has accepted a position with the Brown Company and will divide his time between Berlin, N.H. and La Tuque, P.Q. He had been doing chemical work in Washington for nearly five years and returned from France a few weeks ago. "Over there" he was associated with G. A. Richter who was major in charge of the Pyrotechnic Division. Capt. Kellogg is a brother of R. S. Kellogg, secretary of the Newsprint Service Bureau.

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REVIEWS OF RECENT LITERATURE.

(Continued from page 184.)

B-4. Development of export timber trade. Hugh A. Rose, Can. Lumberman, Jan. 15, 1919, p. 33. Forecasts the development of a satisfactory home market, after a temporary period of readjustment, and an enormous foreign trade in forest products. Prices of lumber and lumber products can not go lower until costs are reduced. The cost of labor will go down only very slowly. To develop the foreign markets, the local situation must be studied carefully, and local requirements met as to credit and methods of manufacture.—C. L.

B-4. Forest Products Laboratory in B.C. Can. Lumberman, January 15, 1919, p. 34. The new wood testing laboratory is now in operation at Vancouver, under a co-operative arrangement between the Dominion Forestry Branch and the University of British Columbia. L. L. Brown, of the Dominion Forestry Branch, is in charge, with a staff of assistants. This is practically a branch of the Dominion Forest Products Laboratories at McGill University, Montreal. With the cessation of hostilities, the active participation of the Imperial Munitions Board in the co-operative arrangement has come to an end.—C. L.

B-4. Canada lands big order for wood products. Can. Lumberman, January 15, 1919, p. 35. The Timber Controller of Great Britain is purchasing in Canada one billion feet of lumber, valued at around \$40,000,000. This lumber will be of all grades, and will be bought through British brokerage firms and Canadian timber agencies in London, who will deal direct with the Canadian lumber producers. A fair proportion of purchases will be made in Western Canada. All the British Columbia lumbermen are represented in London by L. B. Beale, Timber Commissioner for the Province. It is of interest to note that, more recently, the appointment of Mr. Beale has been announced as British Trade Commissioner to Western Canada, with headquarters at Winnipeg.—C. L.

B-4. Nova Scotia Lumbering. Can. Lumberman, Jan. 15, 1919, p. 36. Although British markets were largely closed, large orders were received from the United States, and the year has been a profitable one for lumber manufacturers in Nova Scotia. It is predicted that 1919 will also be a busy year, with prices even higher than in the past.—C. L.

B-4. Canadian forestry troops in England and France. Can. Lumberman, Jan. 15, 1919, p. 39. The numbers of these troops reached 18,000, with scores of mills. Describes some of the difficulties, and shows the remarkable efficiency of the results accomplished. The work in France was under command of Brig. Gen. J. B. White, manager of sawmills and pulpwood operations for the Riordon Pulp and Paper Company, who has now returned temporarily to Canada. The commanding officer for all Canadian forestry troops is Gen. Alec. McDougall.—C. L.

B-4. Canada must go after export on big scale. Maj. Gen. A. D. McRae, Can. Lumberman, Jan. 1, 1919, p. 27. "Canada can get large lumber orders from the British Government, but it is imperative that united, aggressive action be taken at once." Not only must Canadian manufacturers unite, but orders must be placed through the Government Trade Board at Ottawa, direct with the Imperial Government. Individually, it is impossible to compete with other

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countries, but collectively our lumber manufacturers can be successful. Every effort must be made at standardization.—C. L.

B-4. War-time achievements of U. S. Forest Products Laboratory at Madison, Wis. Am. Lumberman, Jan. 4, 1919, p. 48. To meet war needs, the staff of this laboratory was increased from 80 employees to some 450. The work for the past year has been wholly of a national defense character, covering the whole broad field of the scientific use of wood in war. Many of the developments will be equally applicable to peace-time conditions.

B-4. Cost system in woods operation. W. J. Rahn, Can. Lumberman, Jan. 1, 1919, p. 36. Gives sample forms and describes their use.—C. L.

B-4. Minor forest utilization during the war. C. T. Howell, Am. Lumberman, Jan. 4, 1919, p. 51. Products of wood distillation; uses of sawdust, and of cellulose, paper and charcoal. C. L.

D-0. Mechanical wood pulp, (Les pates mecaniques de bois). By E. Rochon, 21, No. 10, p. 165-170 (1918). Description of the industry of mechanical wood pulp in France.—O. R.

N-3. A kilowatt hour and the coal required to produce it. B. H. Blaisdell, Elec. Engineering 52, No. 2, 26 (1918). Reports on tests carried out at the Manila Testing Laboratory and the Meraleo plant. "Only 10 per cent of the total heat contained in coal reaches the switchboard." At the Meraleo plant it takes on an average of 3 lbs. of coal to produce 1 kilowatt hour. B. accounts for the heat losses during the process of conversion.—(Chem. Abs.)

R-0. Africa and the Pulp and Paper Industry, (L'Afrique et l'industrie de la cellulose et du papier).

Le Papier, No. 7, p. 121 (1918). An article studying the possibilities of the pulp and paper industry in Africa and treatment of "Baobab" as a source of supply investigated.—O. R.

R-5. Study on the world industry of wood pulps, (Etude sur l'industrie mondiale des pates de bois), by Alexis de Kepper, 21, No. 8, p. 134 (1918). Article giving statistics of imports and exports of wood pulp in different countries.—O. R.

WOODPULP FOR NITROCELLULOSE.

During the war a threatened shortage of cotton linters led to investigations of woodpulp as a substitute in the manufacture of nitrocellulose. Tests at the Forest Products Laboratory of the U. S. Forest Service at Madison, Wisconsin and semi-commercial tests at a Government arsenal indicate the preparation of successful pulps. A possible demand of about 500 tons of this material per day was anticipated.

Opaque tissue paper need not always consist of 100 per cent rags. Papers made from pure chemical-pulp have a rag-like character when cold-bleached soda-cellulose and a limited percentage of white paper shavings are added.

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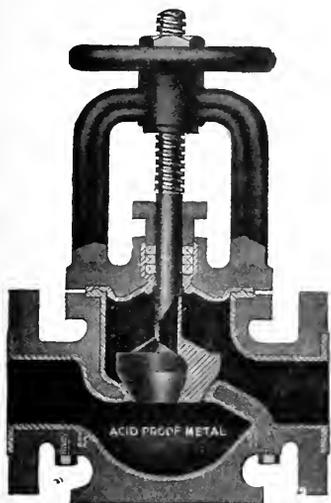
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WAXED PAPER AS A SURGICAL DRESSING.

Waxed paper, the kind produced so extensively by the Kalamazoo Vegetable Parchment Company, is proving a decided factor in the alleviation of pain, and is now being used extensively as a surgical dressing. It takes the place of oil silk and rubber tissue, both of which are now scarce. Paraffin paper costs much less and is available in greater quantities. The application of the hot paraffin to the paper in process of manufacture is such that the paper is thoroughly sterilized. At the present time there is no great general demand for paraffin paper for use as a surgical dressing, because up to a short time ago its value as such was a matter of experiment. Its utility in this respect is, however, now firmly established by satisfactory results secured.

Dr. Edward Ames, of Kalamazoo, has used waxed paper successfully for dressing wounds. He mentions that patients have been away from the office for four or five days, after a moist dressing has been applied with paraffin paper, only to find on opening the dressing that the paraffin paper had kept it moist. The waxed surface of the paper is sufficiently smooth to permit drainage, which glides along the under surface of the paper and seeps out at the edges.

Bronze beater-knives are not uneconomical on account of their high price, for in contradistinction to steel knives, they still possess a considerable value for old metal after being worn out. In addition, bronze knives prevent white pulp becoming grey.

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EDITORIAL

THE SINS OF THE FATHERS.

The Pulp and Paper Magazine occasionally receives an inquiry for the name and address of a chemist for a pulp and paper mill. In practically every case it is either stipulated or strongly recommended that the applicant for such a position be a man of acquaintance with the industry. It is desired that he shall have a special knowledge of the business and preferably some experience in a pulp or paper mill.

Men with such qualifications are rare articles, and it is largely the fault of an older generation of paper makers that this is so. It is only within recent years that more than a very few mills would think of having such an innovation as a chemist on the premises. With no demand for chemists trained in pulp and paper mill work and with no inducement held out to such men as might have been interested in making a special study of the science of paper making, it is quite natural that educational institutions made no particular effort to provide such training as is now coming to be in very considerable demand. This unfortunate circumstance leaves the progressive mills who are beginning to wake up to the advantages of maintaining a chemist and a well equipped laboratory pretty much in the lurch. No doubt some of these mills will blame the colleges for not giving their students special training in this particular line of work. Such accusations are almost entirely unfounded because most institutions would be only too glad to include in their courses some opportunity for instruction or special investigation in this field. There are, of course, some old-fashioned out-of-date universities just as there are some old-fashioned, out-of-date mill managements, but there are a few progressive institutions that would be glad to provide for the instruction of paper mill chemists if they could be assured of the necessary support.

The University of Maine has for six years maintained a number of special courses in pulp and paper manufacture and the men who have taken these courses have been in great demand. It has been difficult at times to induce efficient teachers to continue their college work when the very training and experience they get in conducting these courses is the best possible preparation for satisfactory service in manufacturing positions. Besides the complete undergraduate course in pulp and paper technology at the University of Maine, the University of Michigan has been given post-graduate work and opportunities for carrying out special research work.

The work at Michigan is to some degree supported by contributions from the paper makers of the state and if efficient courses under capable instructors are to be maintained at our universities we believe it will be necessary for the industry to assist financially in their support. A paltry sum annually from each paper mill would be sufficient to supplement the available funds of a university and with the equipment that a university would already have there would be little difficulty in making up the necessary budget for carrying on such work. There is at present no opportunity in Canada for doing such work in this most important industry and we feel that it is time for the manufacturers to encourage the establishment of suitable courses of instruction of university character under competent instruction and with sufficient equipment for first class work. The only chance at present is for some enthusiastic student to work out a thesis on some particular problem of paper mill work, but such attempts are likely to be of a purely academic character rather than to have any particular connection with the industry or to give the student an insight into the principles and practice of pulp or paper manufacture. The movement so generously supported by the industry for providing text-books for extension schools and correspondence instruction is an excellent and commendable step but such instruction is intended primarily to increase the general intelligence and to broaden the knowledge of the industry among the operatives in our mills. Such opportunities cannot possibly make trained scientists capable of doing research work or conducting the control of operations along scientific lines. It will provide more efficient and more intelligent assistance to these scientific and technical directors. But the leaders must be provided with university training and the point of contact should be supplied by at least one of our Canadian universities, in the form of special courses in pulp and paper technology.

Looking at the matter carefully from all sides it would seem that McGill University is most suited for the establishment of such a course. The faculty includes particularly able professors, not only in chemistry, but in the allied engineering subjects, which are so important to a well rounded training for a man who is to enter this industry. McGill has first class laboratory facilities and what is especially important it is right next door to the Forest Products Laboratories of Canada. There is no doubt but that arrangements could be made with the Forestry Branch for

the occasional use of the excellent equipment of these laboratories for demonstration purposes in connection with pulp and paper courses. Such a connection would also give the laboratories the benefit of the occasional service for consultation work or other assistance of the pulp and paper men of the university faculty, and such a course would provide a coming supply of recruits for the staff of the laboratories. In fact, a considerable amount of valuable and much needed investigation might be carried on as theses by students working for a doctor's degree. The training of men along these lines and with such excellent opportunities would soon provide our industry with leaders who would have a preparation not surpassed in any other country, and Canada would soon be in a position to provide specialists to other countries instead of having to depend on outsiders for practically all the pulp and paper technical men that are to be found in our mills.

In the meantime it is up to the mills to take in chemists and engineers and give them a chance to get as much knowledge of the industry as possible from the men in the mill. A lot can be learned by really studying a mill.

A MUNICIPAL PAPER MILL.

On another page of this magazine there will be found a reference to the proposed paper mill that is being agitated for the city of Winnipeg. It is understood that the municipal authorities are favorable to the idea and if the general population of Winnipeg is as enthusiastic and capable as the samples we have met it seems quite likely that the proposition will go through and be made a success. With the enormous stretches of wood which lie to the north and the possibility of bringing it by water almost all the way to the mill, there should be a plentiful supply of raw material at a fairly reasonable cost. The proposition as outlined in news dispatches does not mention any details as to supplies of sulphur and lime-stone, but these should certainly be as accessible at that point as at the majority of our Canadian mills.

It is stated that the city of Winnipeg consumes approximately 100 tons of newsprint per day and in addition there are a number of smaller cities within reasonable distance that would naturally find such a mill their most convenient source of supply. Without actual figures it would seem that the outlying demand would be at least 50% of the local requirements. In addition to newsprint it would seem that such a mill could very well consider the manufacture of one or two other grades such as boards and wrappings that might be made from the same raw material and which might also consume a large proportion, if not all of the waste papers that are, or could be, collected in Winnipeg and vicinity, and which at the present time can not be profitably transported by rail to other mills consuming this grade of material.

One of the interesting side lines on the proposition is that employees be made part owners of the mill. The Winnipeg council unanimously agreed to the proposal to ask for the power for establishing such an industry.

The Winnipeg idea has roused the Quebec Telegraph to inquire why Quebec should sit idle and watch Winnipeg get busy on such a proposition as this. The following extract from an editorial in this daily shows that there are at least some who still believe that Quebec is the land intended by Providence to supply the world with newsprint.

"If Winnipeg can support such an industry, what is the matter with Quebec? This city of ours is situated in the heart of the pulpwood centre of Canada, and a paper mill here could find the raw material easily available by water and by rail, while the labor conditions of Quebec in every way favor the establishment of paper mills here. We have, moreover, boundless electrical energy.

"Some years ago, the Telegraph suggested that this city should make a bid for paper milling. The time is now ripe to open the project again. Our new Trade Commissioner should lose no time in investigating the matter with a view to interesting promoters and capitalists. The manufacture of paper in Quebec should be a natural, profitable, and expanding industry with vast possibilities before it. Why should we sit still like the proverbial lazy frog with our mouth open waiting for Providence to send a fly, while Winnipeg and other competing cities get out and capture the bag?"

WHAT THE KING SAID.

Probably no sovereign since the days when the King led his armies in person and marched and slept with them in the field, has been closer to the heart of his people than George V. He seems to know what they have, what they lack, what they want, and what they need, and, personally and through his ministers, is constantly endeavoring to make their lot happier. An instance of his appreciation for the need of improving the living conditions for a large part of the people and a grasp of the importance of complete co-operation of all factions to accomplish this end is given in his speech from the throne to the Houses of Parliament, early this month when he urged the legislative bodies to act resolutely in stamping out poverty, diminishing unemployment and improving the health of the nation. In concluding, the King said:

"We shall not achieve this end by undue tenderness toward acknowledged abuses, and it must necessarily be retarded, by violence, even disturbance. We shall succeed by patient and untiring resolution in carrying through the legislation and administrative action which is required. It is that resolute action I ask you to support."

The Manufacture of Book Papers from Wood Fibres*

By A. O. BOWNESS,

The E. B. Eddy Company, Limited, Hull, Que.

In the manufacture of Book Papers, the materials principally used are rags (cotton and linen) sulphite pulp, soda pulp and groundwood. Canada being one of the largest pulpwood countries in the world, I shall confine my remarks to the making of book papers from sulphite pulp, soda pulp and groundwood.

The first thing of importance we have to consider is the quality of materials which enter into the making of book papers. The ideal fibre is the one which retains its original strength and elasticity to the greatest extent after being prepared into "half stuff," i.e., in the cooking and bleaching of the fibre, the reason for this is that such a fibre has the best felting qualities. I do not purpose saying anything about the manufacture of sulphite and soda pulp other than to say which is the most suitable pulp required for book papers. What the papermaker wants is a strong easy bleaching pulp, requiring the minimum amount of bleaching powder or electrolytic bleach liquor. The reason for this is not so much a matter of dollars and cents as the very important fact, that in this way we obtain a good white color and a nice soft fibre with the original strength and elasticity least impaired, and one with good felting qualities. Better results are obtained by removing all the lignin in the wood during the cooking, than using a large amount of bleach to obtain a good white color. Pulps which require a large amount of bleach are apt to produce a hard brittle fibre with very poor felting qualities, the resultant sheet being unsatisfactory, however carefully treated in the beaters. This no doubt is due to possible chlorination or residues of lime salts which cannot be entirely eliminated by simply washing with water. A well cooked pulp should contain from 90 to 95% cellulose, in other words should not lose more than 5 to 10% in bleaching.

No doubt at some time or other every superintendent has met with pulps which were difficult to bleach to a good white color. In such cases it might be advantageous to wash out the spent bleach liquor, and treat the pulp for a short time with a weak alkaline solution, afterwards washing and then bleaching again in the ordinary way. It is necessary, too, after bleaching, to wash thoroughly in order to eliminate as much as possible the spent bleach liquor or lime salts, which if allowed to remain in the stock will result in the fibre being hard and brittle. Antichlors, generally hyposulphite of soda or sulphite of soda are often used to neutralize the chlorine, which is always present more or less in the stock, but this treatment has its attendant dangers in that should an excess be used, it will have a detrimental effect in the subsequent sizing and coloring. Drying, too, has an effect on the strength of a fibre, every drying of a fibre weakening it so that it might be well to seriously consider buying pulp

in a wet state which would then require only one drying throughout the whole process.

For a good general bleached stock, I have obtained good results by using half sulphite and half soda pulp, either bleached separately or together. I might mention also the use of electrolytic bleach which has not as yet been very extensively adopted by paper manufacturers owing no doubt to the high cost of power. In tests made at the Municipal School of Technology, Manchester, using an electrolytic bleach liquor made from common salt and water containing 12 grams of chlorine per litre compared with chloride of lime liquor containing 17 grams per litre, it was found that the electrolytic bleach liquor took less time, was easier to wash and the resultant stock was softer and more pliable than with the chloride of lime. Now-a-days when cooking of chemical pulp has been enormously developed, the papermaker is able to purchase the grade of pulp most suitable for his purpose. As to the kind of groundwood most suitable, I would say that wood ground on medium sharp stones and at about 60 lbs. pressure will produce a pulp having the best felting qualities.

Beating.

We have now to consider what is the condition of the stock in the heater before beating. It consists of small bundles of fibres known as filaments, the object of the beaterman being to reduce his stock to single or ultimate fibres without the crushing that is done only too often. From past experience it has been found that small beating engines produce a stronger pulp than large ones. Competition growing keener and greater production required, larger rolls have superseded the smaller ones thereby increasing the reducing effect of the beating surface but detrimental to a certain extent to the quality of the paper. A beating engine must be considered as a combination of a reducing apparatus and a mixer. The circulation of the pulp has no other effect than to mix the pulp properly while the reducing apparatus, i.e., the roll and bedplate should be as efficient as possible. Whatever the shape or size of a beater is, it must be so constructed that no stuff will lodge in any part of it and must have a roll heavy enough to thoroughly soften the pulp and keep it in constant motion. Numerous patents have been taken out in connection with beating engines, but generally speaking the Hollander has proved the most satisfactory as yet. Phosphor-bronze knives not less than $\frac{3}{8}$ " thick can be used to advantage for paper made from bleached stock, thus avoiding any contamination with oxide of iron which is liable to take place when using steel knives. Usually the knives in the roll are set parallel to the axis of the roll and the bedplate knives at an angle, which arrangement imitates to some extent the action of a pair of seissors.

Bedplates of large working surfaces have been tried, but in practice it has been found that no serious deviations from the narrow type of plate are of much value.

*Paper read at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal, January 30, 1919.

The properties required of a book of writing paper are:

- (1) A well closed sheet with a good even surface.
- (2) A nice soft pliable sheet with a strong feel to it.
- (3) It must be opaque, and
- (4) Bulk well even with a high finish.

To obtain all these properties the treatment of the stock in the beaters is one of the most, if not the most, important operation of all. The properties of any paper made, depend on the treatment it receives during the first hour and a half in the beater. To get a good even surface which will take the required finish with the least calendering, great care must be taken in brushing out or reducing the stock into single or ultimate fibres. The roll should be let down to a little more than a rub, just sufficient to mill the stuff, which can be accomplished in about two hours. I refer now only to wood fibres. As the stock is required short and fairly free to enable the machine-tender to get a good level sheet on the wire, all the cutting action should be done in a Jordan or Marshall refiner, the latter preferred, owing to the extra brushing action of the disc. In this way the fibres retain their original strength and elasticity to the greatest extent, producing a stock which will have the best felting or interweaving properties and will enable the machine-tender to obtain a good level sheet which quite naturally will require the least calendering to obtain the required finish and so bulk well. In these strenuous days of large production, the refiner proves its worth. If the stock is beaten to the required length in the beater, then the refiner is not of great value. On the other hand, if the beating consists of simply brushing out the stock and cutting to the required length in the refiner, then the refiner will prove of great value, not only in the saving of time, which means more production, but giving the beaterman more time to brush out his stock which is so very important, and will result in a much better sheet of paper.

With regard to the refiner—I might say that the preceding remarks only apply to wood papers—not to hard stock such as rags or rope which must be beaten to the required length in the beaters to obtain the best results. One of the principal objects of the beaterman should be to retain the original strength and elasticity of the fibre as much as possible in any kind of paper and so obtain the maximum strength from his stock. Putting the roll down too heavy at first should be avoided as the fibres, while still retaining their length to a certain extent, will become weakened and the sheet will have a raw soft feel which even the addition of more than the usual quantity of starch will not overcome. Worn bedplates are often a source of trouble, in that the roll has to be put so firmly down in order to make fine stuff, which means extra driving power, and the stuff having to be kept a much longer time in the beater before it can be made fine, is very liable to become too soft.

Sizing.

Some book and writing papers must have good water and ink resisting qualities, while others do not require to have this quality to any great extent. This is obtained by sizing agents added to the stock in the beaters. For these grades of paper we are practically limited to rosin in general practice. The cost is reasonable and the rosin soap easily made by boiling

rosin with an alkaline solution, usually soda ash. Some papermakers claim that the degree of sizing is proportional to the amount of free rosin deposited on the fibres, while others claim that the active sizing agent consists of resinate of alumina formed when the rosin soap is decomposed by the alum. I am not prepared to say which theory is the correct one, but would like to mention that I have obtained satisfactory results using both a neutral size containing no free rosin and an acid size containing 35 to 40% free rosin. Personally, I prefer the high free rosin size for one important reason, viz., the cost. Using less soda ash in boiling the rosin, less alum is required to precipitate the combined rosin, as well as less size to obtain the same degree of sizing than is required when using a neutral size. Naturally in a high free rosin size one might say there is the danger of rosin spots in the paper, but this danger has been practically eliminated in the method of making the size solution. Size should be added to the beater in a dilute emulsion as in this way the permeation is more complete than by adding the thick rosin soap. Apart from the composition of the sizing solution a great deal depends on the treatment of the stock in the beater. When the beaters are heavily loaded with as much stuff as possible, the ultimate fibres do not come under the cutting action of the knives owing to the body of the stuff between the roll and the plate and thus though well hammered out, the original form and elasticity of the fibres are preserved. There are two reasons why stuff prepared this way will size well: (1) Such stuff carried down the wire retains its water obstinately and the size coating is well felted among the fibres before the water is drawn out by the suction pumps, the loss of size in the backwater being small. (2) The strength and flexibility of the fibres enable them to felt closely when coated with the resinate of alumina and a strong well sized paper is produced with the usual amount of alum and size.

Paper dried by hot air is very poorly sized compared with paper dried on the machine. This is probably due to the resinate of alumina which has been precipitated on the fibres in the beater, becoming fused and spread out and into the interstices of the paper in such a way as greatly to increase the water and ink resisting qualities.

Sulphate of alumina or alum as it is generally called, is used to precipitate the combined rosin in the size, the amount depending on the quantity of soda ash used to saponify the rosin and also to precipitate any lime or magnesium salts if the water used is hard. Most papermakers use a slight excess of alum which has the effect of hardening the paper and giving it a better rattle and acts as a mordant in helping to fix the color.

Loading and Coloring.

The addition of loading within reasonable limits should not be considered an adulteration which is so often the case. From 10 to 15% can be safely carried, making the paper more absorbent and opaque, enabling it to print much better, and lessening in a considerable degree the friction when in contact with the type when printing. When selecting the most suitable loading material there are three important points to be considered:

- (1) That its chemical nature is such that when in contact with free acids or chlorine compounds

which are liable to be present in the stock, no chemical or physical change takes place.

- (2) It should be free from sand or coarse particles which would tend to impair the value of the paper.
- (3) The color should be bright enough to blend with the shades of paper for which it is intended.

Kaolin or China clay is the loading generally used in this class of paper, filling up the pores of the paper, giving a sheet of closer texture which takes up ink more rapidly and helping materially in bringing up the surface when calendering. Chemical wood fibres being transparent, China clay also makes a paper opaque, a very important point in book papers. Some papermakers boil the clay with rosin size, the idea being that in this way it is more firmly held by the fibres and less liable to pass through the meshes of the machine wire. In my opinion, the amount carried, as in the case of sizing, depends to the greatest extent on the nature of the stock and the treatment it has received in the beaters. The sizing and feel of clay loaded papers are never so good as papers loaded with such materials as pearl hardening (calcium sulphate) barium sulphate or agalite but these are generally used in the better qualities of writing papers. Starch is often added to stiffen up a paper as well as for imparting a high finish in the subsequent calendering. When starch is boiled with the resinates of soda solution a larger percentage is retained by the paper. While taking on quite as good a surface it has not the firmness or rattle obtained when the starch is added in the dry state.

The addition of coloring matter is necessary for white papers even when using all bleached stock of a good white color. I would like to explain briefly a point which might prove useful when using colors. There are three primary colors, red, blue and yellow, which used in the proper proportion make white. Should the stock be either on the red, blue or yellow shade, the addition of the other two colors will correct it. For example, when using a furnish of all bleached stock which has always more or less a yellow shade to it, and which has to be corrected to obtain a good white color, the addition of red and blue, the two other primary colors will correct the yellow shade and give a good white color.

Chests and Screens.

In some mills the variation in the weight of the paper is a serious matter. Several devices have been tried with more or less success I believe, but a proper arrangement of stuff chests will go a long way in overcoming this trouble. The best plan is to have two large chests each capable of holding more than the contents of a beater when diluted with water to its usual consistency and a smaller one placed so that the stock will run by gravity to the mixing box on the machine. The stock from the beater is emptied into one of the large chests, being thoroughly mixed before it is pumped through the refiner into the other large chest from which it is pumped into the smaller one, which should always have an overflow, and allowed to flow by gravity to the mixing box. In this way the consistency of the stock can always be maintained with a little attention from the beaterman when emptying a beater. Trouble will also be caused from bad weight, especially when making thick papers carrying a large percentage of loading if the agitator

revolves too slowly, a good speed for all round work being from 6 to 8 revolutions per minute. It is an advantage to run the stock slowly from the mixing box through a series of wooden troughs or sand traps, generally of a sinuous form, having thin strips of wood placed at intervals at right angles to the flow or the bottom covered with woolen felt serving to retain any of the heavier particles of dirt, sand, etc., which may be deposited while the pulp is flowing to the screens.

Opinions differ as to the efficiency of flat and rotary screens. On this class of stock, taking everything into consideration, the rotary screen has proved most satisfactory, needing little or no attention, and the wear and tear being much less than with flat screens. Bolts or screws working slack, which is often the case with badly fitting screen plates often cause small hard knots in the paper which when calendered will result in a dark spot, the centre of which is transparent.

Pointers for the Machine-Tender.

The troubles of a machine-tender are too numerous to mention here. However, some of the more important questions relative to the paper machine might prove interesting.

The question as to the most suitable length for the machine wire is one on which there is great diversity of opinion. The speed of the machine and the nature of the stock to be worked must be taken into consideration in regard to the length of the wire. For a soft greasy stock at a quick speed a 65 foot wire will be an advantage, whereas if look is the most important, the best results will be obtained with a 38 to 40 foot wire. To get a fairly good sheet on a 65 foot wire, the stuff must be very free, otherwise it will be so inert before it reaches the dandy that papers will have a dull crushed look, especially when making waxes. When the stuff is free enough to counteract this deadness the table rolls in contact with the wire take away so much of the water that it is often difficult to obtain a clear impression with the dandy though more water is used. Lowering some of the rolls out of contact with the wire will allow a longer time under the influence of the shake and less water would be required. It should also be taken into consideration that the greater the amount of water used the greater the loss of size and loading in the backwater. The spread and look of a sheet depends a great deal on the shake which should at all times be a smooth mesh and null. Too much play on account of the brasses which support the shake bars, etc. becoming worn will result in a double shake causing thin edges. If the shake is too long the stuff will be washed back from the double strain causing a white mark about three inches from the edges on each side similar to that caused by rollers in the wire.

The life of a wire depends to a great extent on the care and attention of the machine-tender. It is also very necessary to have all the rolls lined up as often as possible when changing a wire. Even if this is done regularly, it will be noticed that the wire sometimes becomes slack on either of the edges after running for some time. This is caused by the shower pipe becoming choked up at the end farthest from the intake and the wire being much more dry is strained in passing over the rolls. A good strong shower should always be used in order to keep the meshes clear, lessen

the strain of the suction and prolong the life of the wire.

Careful attention must also be given to the suction boxes. Scored boxes are often a source of trouble, due to small particles of sand or grit becoming embedded in the cover, which very quickly ridge or score the wire, causing white marks similar to thin edges, to appear, and shortening very materially the life of the wire if allowed to run any length of time. Different covers such as brass, vulcanite, glass, mahogany and maple have been used to face the boxes with, but generally speaking, hard maple is used. Though less hard on the wire, boxes faced with maple are very apt to vibrate when drawing hard. This can be overcome to a great extent by inserting a strip of vulcanite, which must be fitted very closely, otherwise it will draw air.

Running a wire too slack is liable to cause creases in the paper under the couch rolls. This crease may give no sign of its presence until the calenders are reached, where it invariably causes a break between the dryers and calenders. Tightening up the wire and putting more weight on the couch will usually get rid of these creases and so prevent much broke being made. Dirty or raised seams will cause breaking both at the press roll and the calenders. A little vitriol poured on the dirty part of the wire or blowing out by a jet of steam will generally remedy this. Should the trouble be caused by a raised seam, the stretch roll will have to be put down a few turns. Another cause of broke is "foaming" which is a very serious matter with some mills. Special attention should be given to the water used in the heaters, as often the carbonic acid expelled from the lime salts contained in hard water is the cause of foaming. An additional quantity of alum should be added to the heater when furnishing in order to precipitate the lime salts in the water. A foam killer which has proved very efficient is made of raw linseed oil, turpentine and bleach liquor.

Worn edges of the couch jacket are also troublesome, causing the paper instead of couching properly, to adhere to the jacket, going far enough up the roll to cause the edge to crack and crease going under the press roll. Easing the weights on the couch and lifting the guard board a little will help, while slackening the wire draw and allowing the web to go farther down the wire, decreases the risk of the paper adhering to the couch. By fixing a small jet of water so that it will play on the edge of the couch, which comes in contact with the paper before it passes under the guard board, the edge can be kept much cleaner, and this also lessens the liability of the paper to adhere to it. Suction couch rolls are spoken very highly of, results obtained being very satisfactory, and eliminating any trouble caused by the jacketed couch roll.

Another important point is the necessity of keeping the seams of the felts square. In the case of wet felts where the seam of the felt is off the square, the warp lies at the same angle as the seam, and thus by closing the pores retards the escape of the air, often causing "blowing." Using a small suction box under the felt before running through the press, will completely cure this. To square the seam either in wet or dry felts as well as the wire, the side that is first must be tightened up, but care must be taken to check the run as both wire and felts will incline to run from the side which has been tightened up. This should always be done after starting a new felt, otherwise the felt will

become unequally stretched and give lots of trouble by moving about when it gets old or worn out.

The pressure on the press rolls varies according to the particular requirements in the finished paper. Should the paper require to be calendered, the drier it leaves the press roll the better it will bulk, on the other hand if the paper is to be rough finished, then it will bulk better if the pressure on the rolls is very light. A dirty second press felt is one of the most frequent causes of cockling, the paper in contact with the dirty part of the felt, is much damper when it comes in contact with the dryers and is liable to become blistered from the suddenness of the drying. Keeping the dryer felts tight has the effect of preventing cockling by pressing the paper more uniformly against the dryers. The drying of the paper should always be done gradually, the heat of the dryers gradually increasing towards the dry end, so as to prevent undue contraction.

Keeping the draws right is necessary, too, especially the draw from the first press to the second press. Should this draw be too tight, the web will be pulled and stretched at the edges, and though no cracks may be seen, the contraction and consequent strain, as the paper is dried, will cause the weakened edge to break as the draws become tightened towards the dry end.

Breaking at the calenders may also be caused through having the draws too slack, causing the paper to fold over at the edge when entering the press folds. If the draw on the dryers be too slack, especially near the wet end, the felts, if they are tight, will take up the slack, and in doing so will cause very minute folds on the edge of the paper. It is an advantage to have two sections of dryers and a pair of highly polished rolls called smoothers placed between the sections and heated with steam, though not to the same extent as the dryers. These rolls help to close the sheet, and also greatly assist the finish in the subsequent calendering. By keeping the paper a little damp as it passes through the smoothing rolls, and not heating the last dryers any more than is necessary to prevent damp spots, the surface imparted by the calender rolls is much improved. When a good surface is wanted, the stuff must be kept fine. Long stuff, though taking on a good finish, always rises up in the sheet, causing a roughness, especially on the underside. The amount of finish given to a paper depends to a large extent upon the amount of moisture it contains, the moisture being applied after drying, usually by means of condensation of steam. The high machine finish thus obtained is liable to go back owing to moisture applied in this way being merely on the surface, and not having time to penetrate into the paper. Papers requiring a very high finish for magazine and illustrated work are generally glazed on the supercalender—the contact with the metal and cotton or paper covered rolls, has the effect of imparting a velvety feel unobtainable by calenders on the machines.

In conclusion, I would like to add a word regarding technical education. Nowhere could it be used to more advantage than in the heater-room, where there is yet ample room for interesting and profitable enquiry, the importance of investigating the effects of different methods of beating, the right temperature of the stock, etc., cannot fail to be of great advantage to the papermakers, for undoubtedly the paper is made in the heater and run off on the machine.

In opening the discussion of this paper, Mr. Rolland

said: There is one thing Mr. Bowness did not mention—the percentage of resin which should be employed in making book paper. Mr. Best, who has had considerable experience, might tell us what percentage of resin should be used and how much he thinks is used.

Mr. Best remarked: To mention a particular instance, the Saturday Evening Post is made with 0.6 per cent of resin. Book paper runs as high as 1¾ per cent, but the percentage of resin used will have quite an effect besides the sizing, that is, ink resistance. It will make a paper a good deal harder, which is a bad feature, as Mr. Bowness emphasized. The amount of alum also affects the feel of the paper. In regard to Mr. Rolland's questions as to what percentage of resin is lost: so far as I can make out there is no resin lost; no matter how much you put into it, it is all retained. It goes up as high as 8 or 9 per cent in some papers, and the characteristics of resin increase the stiffness and rattle of the paper all the way up.

In regard to the loss, Mr. Bowness said: In a mill where the Fullmer Save-all was installed the back water ran away perfectly clear, which, if I remember, showed a saving of 5 to 7 per cent. The back water was perfectly clear in running away, and practically all the loading was saved.

Mr. Stadler made the following remarks regarding losses. In regard to the passage where the speaker said that the loss increases if the percentage of water is increased on the wire. I don't quite see it that way, because I presume in the writing paper industry they do the same as in the newspaper industry, they circulate the water, and consequently the losses are about the same standard. But it should be particularly emphasized, that anyone in running a paper machine should not use more shower pipes than he need, and if possible use shower pipes on which the water is brought back from the machine. By such an arrangement there is a very material saving in fibre.

Another thing is the question of the pulp grinding pressure most suitable for writing paper. It is stated that it should be ground at a sixty-pound per square inch. What is the basis of that? That is one thing we ought to reduce. It is a factor—the square inch basis on the pocket.

I would be much interested if the author would tell us whether he used any instruments or simply worked by the old rule-of-thumb method, because I have never had the pleasure of visiting his plant, and I don't know whether he uses any instruments or not.

Mr. Bowness: We are not using any instruments for the simple reason that the operations with the different pulps would be against using any standard pressure, and so far as I know I have never heard that they are used in heating. Of course, I cannot say they are not used, but I never heard of any.

Mr. Stadler: The closing remarks were very interesting when it was emphasized that the technical education is very essential, and furthermore, that the paper is made in the beater room. It is probably in order to say that nobody would think to-day of boiling sulphite pulp without having recording instruments as to temperature, pressure, etc. Yet, in spite of the fact in the writing paper industry with all important factors in the beater room—I have seen but one mill in North America using instruments in the beater room and I am sure that various standard instruments could be applied to advantage in the making of writing paper in this country.

If we want to expect results from men who have

received technical training, we must give them specific instructions. Unless you provide them with the machinery or instruments so that their knowledge can be applied scientifically, you don't progress fast enough, but the moment you introduce instruments you will have an entirely different spirit of organization; the men will appreciate this sort of thing, and I think the sooner you do that, the better it will be for the industry in general. If we want to take the world-lead as exporters, we must use every instrument we can.

WINNIPEG MAY HAVE BIG PAPER MILL.

For many years there has been an agitation in Winnipeg to have a paper mill located in that city, and more particularly a newsprint plant owing to the long haul and heavy freight charges for this commodity. In the past there have been many attempts and extensive negotiations to carry out such a project, but all have come to naught for various reasons. Now the legislative committee of the City Council has taken the matter up and it is proposed to take a referendum of the ratepayers to erect a plant that will cost three million dollars.

Ald. F. O. Fowler, sponsor for the proposition, stated that newsprint in Winnipeg cost to-day \$88 per ton, including \$19 freight, and he contended that with a 500 ton mill, the cost would be reduced to \$36 per ton, while, with a 100 ton plant the cost would be \$40 per ton. The present need of the city was 100 tons of newsprint daily. Winnipeg owns its own power plant, and it is suggested that the employees of the mill be made part owners and have an interest in the actual earnings. The plant would be built within the city limits, and it is stated there are unlimited stretches of timber areas, including pulp wood in Northern Manitoba, which would serve as a feeder for the industry.

It is estimated, as already stated, that the total outlay for the mill will be three million dollars, and that the amount paid out in wages will reach \$3,000 weekly.

J. D. McArthur, who has been one of the promoters of a paper mill in the west, thought before going ahead with the proposal it should be given strict and thorough investigation. J. J. McDiarmid, who some time ago made a request to the city for a special water and power rate to proceed with a wrapping paper plant, has along with Mr. McArthur, declared that his scheme will be abandoned if Winnipeg launches its undertaking.

Mr. McDiarmid added that the legislative committee was talking without any certain facts when the members stated that, with a 500 ton plant, newsprint could be turned out for \$36 per ton. Mr. McDiarmid remarked that it could not be done, as he had gone carefully into all the figures, and the expense would be much higher. There the matter rests at present, and whether it will go ahead or not is problematical.

KELLOGG CAN COOK.

R. S. Kellogg appeared at the dinner of the Technical Association in dress suit plus a big brass badge. It bore the number 290 and signified that the U. S. Food Administration has seen fit to give him a license (which we saw) to the title of Registered Camp Cook. Mr. Kellogg is not in the lumber business now, and cooking sulphite is not cooking beans, in case he wants to cook pulp.

The Cornish China Clay Industry

From Our Own Cornish Correspondent,
W. TRETHERWEY.

Since my last notes on the famous Cornish China Clay Industry much has happened of great import and interest to your readers, and I am hoping that this letter will reach you in time for an early publication in the New Year. For two years I have been away from the quietude of the clay-land of Cornwall, and have been attached to the Army Post Office in London, and could not, therefore, devote the time I so much desired in keeping your readers informed of the doings in the clay industry that would be of interest to them. However, I will do my best in the brief respite at my disposal to give your readers a review of the present situation. In the first place the armistice, which is a good augury for the ultimate peace of the world, came as a great relief to those of us who inhabit the British Isles, and was none the less welcomed by your own country.

Commercially speaking, our connection with Canada, as far as our china clay interest was concerned, was in its infancy, but there were indications before the war of Canada becoming one of the great markets of the future, and there is no doubt that when we once more get back to our normal conditions of production and shipping, Canada will rank among our best customers.

Before the war the production of china clay was, perhaps, Cornwall's most flourishing occupation. After a few months of re-construction it will become so again. China clay is very largely a product peculiar to our own country. Clay of a sort can be got elsewhere, but when the best is absolutely essential one must come to Cornwall for it; thus to a very large extent the china clay merchants possess a monopoly in a product of great value in a variety of manufactures.

Those engaged in a proprietary capacity in the china clay industry have suffered terribly through the war, many companies having been brought to the verge of financial embarrassment. As wages have increased it cannot be said that the clay producers have been at all unmindful of the very hard times through which their workmen have passed, and if those increases have not compared with the increase of living, it has been for the fact that the clay firms were not in a financial position to bear it. The closing months of the year 1917, it is confidently hoped by all associated with the china clay industry, will mark a most important epoch in the history and development of this section of British commerce. The fact that china clay holds the field as one of the cheapest raw materials obtainable, and that it is such an indispensable product in such large industries as pottery and porcelain ware, in the manufacture of all classes of paper, it is also extensively employed in bleaching and the production of cotton, and quite a variety of chemical and other uses, makes it one of the most remarkable and valuable of raw materials on the market. Prior to the war the Cornish clay producers were subjected to a very spirited competition for various continental and other markets, and now, upon reflection, such competitive anxiety has been proved to have been quite unnecessary. It is hoped that those clay merchants who are now associated with the latest scheme

will never allow themselves to be disturbed again by such fears of competition or even substitution. These are mere bogies produced by those desirous that the china clay producers should continue to be a disorganized and competitive crowd of salesmen. The new scheme which has evolved out of sheer adversity wrought by the exigencies of war, is considered to have been the best possible solution, and up to the time of writing it has certainly obtained the highest possible satisfaction expected. It was not adopted without due deliberation, but after six months' frequent interchange of opinions and the practical unanimity displayed throughout, its whole progress and final adoption augurs well for its future success and utility.

The "Associated China Clays, Limited," is the registered name of the new combine for the china clay trade of both Devon and Cornwall, which partakes of the nature of a "Cartelle" for a minimum period of seven years. Common adversity, as I have already stated, was the chief cause of bringing into effect this all important and absorbing project. The enormously increased cost of production with no corresponding rise in the selling prices, was bearing far too heavily upon the traders generally for the capital invested to withstand, and as I have previously remarked, many of the firms were obliged to suspend their operations temporarily, whilst others were faced with heavy financial propositions. The "Associated China Clays, Limited," will be controlled somewhat after the style of a "Clearing House." Not only will the selling prices be fixed and the quantities for the various markets be distributed, but special attention will be given to railway and shipping transactions, and transit, and many other advantages will be regulated accordingly. It is even contemplated that at no distant date the new combination may regulate the deliveries of china stone and the distribution of china clay casks and sacks, and that a purchasing board or department may be established for the purchase of coal and other goods for the trade, which should be to the mutual benefit of both the producer and consumer.

The powers of the new combine taken under the articles of association are both wide and comprehensive, and reflect nothing but the highest credit on the part of those clay merchants who not only conceived the idea of such a commendable scheme, but brought it to such a satisfactory consummation. The registered offices of the "Associated China Clays, Ltd.," are at St. Anstell, and for this purpose the commodious and historic mansion known as "The Old House," has been acquired and its control of the trade took effect from January 1st, 1918. Among the numerous benefits which the consuming market should soon derive is the continuity of deliveries and uniformity of quality under commitments entered into. The new scheme has also this further merit to commend itself, in that it does not countenance the limitation of production in order to create an artificial scarcity, for the purpose of inflating the prices. The only way in which the output will be limited is simply the demands of the market. With the pooling of interests in one central organization and the setting up of machinery for seeking, developing and fostering markets the demands for china clay in future should be largely augmented. Energies that have been spent in competition in the past between producers should now be applied in the extension of

markets, and particularly those of Canada and the United States of America, and in accordance with these alone will the output of the Cornish clay be limited.

In everything that the china clay industry has done during the war the proprietors have received the approval of the British Board of Trade. During the past year one of the leading members of the Commercial Intelligence Department of our Government, addressing a body of manufacturers, declared that in the coming commercial war the combination of firms engaged in particular industries is of the first importance and would be of incalculable value to all associated therewith, and as the china clay industry was among the very first to adopt this principle, and also the formation of a National Council for the China Clay and Stone Industries of Devon and Cornwall, it shows the keen desirability of our Cornish clay merchants to keep pace with the advancing times. This National Council just referred to was formed as a result and in conformity with the Whitely Reports, or the Government's Commission results on the subject of labor, and comprises twenty members equally divided between employees and employed, and had been established with a view to better organization and closer working with the employers and the employed, and also in the negotiation with Government departments. The functions of the National Council were by no means limited to matters affecting the conditions of labor. They will include the restoration and advancement of productive capacity; peace problems, prior claims to raw material, machinery essential to the industry, financial facilities for the cementing and extension of trade, new outlets for this product, and every possible use that can be made for it as well as its refuse or by-products in the manufacture of new articles of commerce, and also the absorption of surplus war stores that may be available on the resumption of normal conditions. In general the National Council may be regarded as a national movement applying itself to matters affecting the commercial, industrial, and manufacturing needs of the industry. This National Council has rendered effective service to the trade in various ways already in regard to the methods of recruitment and transmission of orders.

The successful formation of the "Associated China Clays, Ltd." has naturally given the liveliest satisfaction to all who are interested in the prosperity of the trade. While matters may even now take some time to adjust themselves the benefits accruing cannot long be delayed, as a great boom is confidently anticipated. One of the strongest points of the combine is that all markets will be well considered, and prices adopted with such moderation that nothing but the best results can be achieved. Fortunately for the clay trade of Cornwall the new Board of Management is composed of a body of gentlemen capable and experienced and will be found fully qualified to pilot the trade to victory and success.

An article of mine which appeared in the British "Paper Maker" would no doubt be of interest to your readers, and considering it has only just recently been published it will give those associated with the great Canadian paper making trade the views of one of our principal exponents.

"The demands made upon the china clay producers, as well as their employees, have throughout the

war been given a loyal and hearty response, and it was whilst the leaders were deliberating in one body on these and other complicated matters that a scheme for the united control of the whole industry was first considered. The unremitting efforts of Mr. T. Medland Stocker, Chairman and Joint Managing Director of "The West of England and Great Beam China Clay Co., Ltd.," and Mr. Walter Sessions, the Managing Director of The North Cornwall China Clay Co., Ltd. (representing two of the largest firms in the world), were only partially realized in the consummation of The "Associated China Clays, Ltd.," toward the end of the year 1917. This showed a very remarkable advance, even exceeding the most sanguinary expectation, and once more indicated that the good old Cornish motto, "One and All," was more than a legendary expression. The success of the new amalgamation will undoubtedly rest in the continuity of those efforts which have already achieved such important results. The Cornish china clay industry has been controlled for years by a body of gentlemen of the highest integrity, both in civic as well as in the administration of the affairs of the trade, and within the past decade these have been augmented by one or two leading administrators of other large industrial concerns; consequently such infusion of ideas have been to the advantage of the industry generally, and on the prospects of the new clay combine I have solicited an expression of opinion from one of those more recent acquisitions to the trade in the person of Mr. Walter Sessions, who has not only made himself known throughout the clay industry, but also throughout other great industries allied to it. Mr. Sessions has in the management of his own company, "The North Cornwall China Clay Co.," a huge undertaking requiring more than the capacity of any ordinary business man in normal conditions, but nevertheless he has taken a lion's share in moulding the latest developments of Cornwall's paramount industry, and to him no small amount of credit is due in sustaining the trade and keeping the flag of the industry flying. In the course of our interview Mr. Sessions remarked that the china clay industry never had a firm basis of unity, and consequently it could not be expected to withstand and eventually overcome indiscriminate competition, thus its prosperity could only be regarded as intermittent, irregular and most unreliable. Those who derived benefit from such singleness of purpose were the factors and consumers who, whilst formerly bleeding the trade to its ultimate death, had little or no respect for those who allowed the industry to be exploited for lack of any policy of reasonable trading. The state of war with all its accompanying restrictions of trade, and the entire collapse of normal conditions, accentuated the need of cohesion among producers, and for the first time in its history the clay trade as a whole was brought face to face with a grave disaster. In order to avoid such an unparalleled situation it became imperative that the serious position thus arisen should be considered in unison and without delay. Quite early in the year 1917 a scheme was brought forward, and after the indefatigable efforts of those interested we can now realize the "Associated China Clays, Ltd.," matured and in full working order as a "Cartelle". It behoves one at the present moment to examine its working effects and the nature of this important organization. The predominating feature has been the

establishment of an adequate all round advance in prices in order that the considerable increase in the cost of production should be met, and one other advantage of equal importance has been the spirit of unity among all of the members associated with this absorbing movement. Although this innovation has given unbounded satisfaction since its inception, those who give the closest attention to the results so far achieved, will understand that the present solution is such that the "Cartelle" cannot be regarded other than a temporary expedient. The tendency of the "Cartelle" has been to keep each producer revolving on his own confined axis without freeing the situation from individual suspicion and speculative anxiety to secure an advantage over others. Producers were never brought so closely together as under the present circumstances, and before any untoward or unexpected event overtakes them it is very essential that the unity thus moulded and which still exists may be further cemented by a still deeper consolidation of the forces, and that some form of financial combination may evolve. It has been admitted that this new system is only a temporary war measure, and all those associated therewith have to acknowledge that it was the wisest and most prudent scheme to begin with. Personal views on this measure were waived spontaneously, and each and everyone worked heroically to bring the "Cartelle" to the highest standard of perfection as their powers permitted them.

Without reflecting with injustice upon those who advocated the "Associated China Clays, Ltd." or working in any way contrary to its continued successful prosecution, considerable attention has been given to the case for a general amalgamation of the whole trade.

The advantages accruing from the formation of such a combine upon a sound financial basis have been recognized by many of the Cornish producers, but the difficulties to be surmounted loyally and otherwise are numerous and weighty. The basis of valuation requires to be established very cautiously and with this object in view some producers have defined a certain method which includes an actuary's figures based upon similar relative results together with an inspection of one another's properties. Unfortunately the result of the negotiations upon these lines between a few of the producers are still tentative, and in order to create a definite scheme of combine without undue delay, efforts are still in progress to arrive at some amicable understanding upon a common basis that should be generally accepted. It is firmly believed, that if the inevitable complications between certain china clay companies can be satisfactorily adjusted, credence would speedily be given to a financial arrangement that ought to meet with general approval of the entire trade. Before any such scheme can be expected to meet with this desired result, it is of the highest importance that all concerned should see with unmistakable clearness the advantages to be gained. It would be very selfish to look at this subject for the present, alone, said Mr. Sessions. The future welfare of the trade ought to weigh in all our deliberations. The methods and manners of the past days are gone, and no one in the trade should have the least desire for their resurrection. No one in the whole industry can afford to ignore the situation as a whole more than the individual can be permitted to escape his social obligations to the state.

The china clay industry has definite possibilities as

a combined force, which it can never hope to obtain under cramped and restricted working conditions. Facilities must be found for producing clay more cheaply and internal competition must be totally eliminated so as to be in a position to meet foreign development. Demand must be increased and better prices obtained than hitherto. Employers of labor ought to be in a position to work together with organized labor to the mutual advantage of both sides. This aspect of the situation as well as having the china clay industry represented upon conventions when conferring or negotiating with Government Departments has been met by the inception of the National Council for the China Clay and Stone Industries of Cornwall and Devon, and which has already received the benediction of the Ministry of Reconstruction. Not the least among the advantages appertaining to a combine will be the stock market quotations, which would render holdings readily negotiable and thereby establish a valuable asset. To reduce the cost of production means not only a saving in the coal consumption, and other materials, but there ought to be no serious difficulty in expediting the drying operations. To create new methods would necessitate the employment of the best engineering ability for such matters as tunneling, filter presses and gas producers, and in this direction the new project would be serving a useful and beneficent purpose to the whole trade and community. The extension of the china clay market will involve research and chemical assistance to manufacturers of goods, such as rubber, soap, asbestos, glass, as well as a number of others who are using the Cornish clay more as an experiment than as an established ingredient.

One of the most important problems as soon as the normal conditions return will be to counteract German influence and capital, which will be undoubtedly devoted among other things, to china clay in other countries. Where the competitive policy is removed better prices could easily be obtained, and in some cases considerable reduction could be advisedly made at times and in some markets for certain qualities of clay. Specialized advertising is also needful, and no industry can survive long without it. Such a policy of development and enterprise could have nothing but the warmest co-operation of the Royalty owners or Land-holders, and with the progress forshadowed in this article, there is no reason why it should not mark out quite a new era for those actually associated with the trade and it should provide a much wider scope and more enhanced position for the rising talent in the industry than has ever been the case under the old regime.

The British Government are very pronounced on the necessity of combination on legitimate lines as being the only hope of the future for dealing equitably with labor and for taking a recognized position in deliberations when approached upon any important subject. In sound combination lies the expansion of trade by which the china clay industry of Cornwall can alone lift itself from its narrow confines to take its place among the very first industries of the world.

A. Papineau Couture has recently accepted a position as chemist with the Riordon Pulp and Paper Company, Meriton, Ont. Mr. Couture was formerly with the Abitibi Pulp and Paper Company, Iroquois Falls, and more recently with the Canadian Explosives, Limited, in their research laboratory at Beloit, Que.



UNITED STATES NOTES

Following the lead of the American Writing Paper Company and other big paper and industrial concerns, the Eddy Paper Company of Three Rivers and White Pigeon, Michigan, has taken out paid-up insurance policies on the lives of each of its 300 employees. The insurance is to be carried by the firm. Policies of \$500 are issued to persons only a year in the company's employ, and \$100 is added for each year in service up to \$1,000. For total disability employees are assured of insurance up to the age of 60.

The paper box industry, severely affected by the war, gathered at one of the largest meetings held in New York, at the McAlpin Hotel. Plans were formed for regular weekly luncheons to include a majority of the box men in New York and vicinity for the purpose of discussing labor and reconstruction problems. The Paper Box Credit Protective Association, under whose auspices the gathering was held, resolved to assist in preserving the high standard that labor has established during the war. A fund was established for wide publicity to encourage co-operation among the box manufacturers and box consumers.

Readers of the Pulp & Paper Magazine will learn with deep regret that R. S. Kellogg, secretary of the Newsprint Service Bureau, was called to Kansas last week to attend the funeral of his father.

An involuntary petition in bankruptcy against the Storm King Paper Company, Inc., 5 Bekman Street, this city, was filled last week. Assignment was made to Merwyn MacKenzie. Claims have been entered by three creditors, Morris Berman, A. J. Wolkenberg and Aaron L. Palmer. The company, which has a plant at Moodna, N.Y., was incorporated in 1916, and George R. Le Sauvage is its president.

A formal call for the Sixth National Foreign Trade Convention has been issued by J. A. Farrell, chairman of the National Foreign Trade Council. The event is scheduled to be held this year in the Congress Hall, Chicago, on April 24, 25 and 26.

Advocates of the "calcimine and wall-paper bill," recently introduced in the New York State Legislature, appeared last week before the Senate Public Health Committee and pointed out the peril attendant upon the use of wall paper in sleeping rooms. They contended that many cases of blindness have been traced to the coloring matter in the wall paper. John J. Doyle, representing the New York State Association for the Promotion of Public Health, said in some cases the color is made of ingredients containing Paris green or arsenic.

The oldest dam across the Wisconsin River, that of the Jackson Milling Company, built more than 60 years ago, was recently destroyed and replaced by a new structure. The new dam is located several hundred feet below the site of the old dam. The property is owned by the Consolidated Water Power and Paper Company.

The Color Company of America with offices at 14 Cedar Street, New York, was incorporated last week, capitalized at \$10,000. Color dyestuffs and chemicals are to be its principal products. The incorporators named are W. Caimovitz, T. Williams and W. Bradlet.

The high prices and scarcity of leather due to war conditions have created a big demand for leather substitutes. To keep pace with the growing demand, the Franklin Paper Company of Philadelphia, manufacturers of paper specialties, proposes, in the near future, to increase the size of its plant and capacity for production by erecting a new building on a site at 5432 Lancaster Ave. Some of the specialties made by the Franklin Company are leather substitutes for suit cases, covers and bottoms for upholstery, blank books, bindings and covers, and many personal articles.

The Pulp Wood Company of Appleton, Wisconsin, has taken an appeal to the United States Supreme Court from the decision of the Wisconsin State Supreme Court in the suit of the Green Bay Fibre and Paper Company, which sought to have certain contracts voided on the ground that the pulp wood company violated statutes relating to trusts and illegal restraint of trade. A referee found in favor of the Fibre Company, and his findings were upheld by a circuit court. On appeal, the State Supreme Court affirmed the decision of the trial court.

The McNulty Paper and Twine Company of Chicago has been given a state charter to operate as an incorporated firm. It has announced as its officers the following: W. P. McNulty, president; A. W. McNulty and James S. McNulty, vice-presidents; M. J. McNulty, secretary and treasurer.

The Great Lakes Paper Company, recently organized in Chicago to carry on a jobbing stock business, has just opened its place at 505 S. Wells Street. The new company, which will specialize in jobs and seconds, is headed by J. Owen Lee, a former employee of the Seaman Paper Company, and a nephew of Thomas Birmingham, one of Chicago's paper trade pioneers.

WORKMEN OWN THE MILL.

Chicago, February 16.

As a reward for faithful service and fealty to duty, the name, goodwill, entire management and chief ownership of the Sewell Clapp Envelope Company has been turned over to the employees of the concern for their personal benefit.

Announcement of this fact and the formal transfer of the property was made at a banquet given at the Hotel LaSalle on Saturday night by Clement L. Clapp, until recently president of the company, in behalf of himself and his co-partners.

"The transfer," said Mr. Clapp, "is in the spirit of world democracy and reward for faithful service and fealty to duty. The employees now hold more than 90 per cent of all stock in the company, and will operate the plant themselves."

Employees of the Crown Williamette Co. recall the time when making sulphite was such a secret process that the mill door was always kept locked. A workman could not get in or out without the consent and assistance of the foreman.

Technical Section

Of the Canadian Pulp and Paper Association

MINUTES OF THE MEETING, JAN. 30-31, 1919.

Following is the first installment of a full account of the annual meeting of the Technical Section, held at the Ritz-Carlton Hotel, Montreal, Jan. 30-31, 1919. Other reports and discussions will follow as soon as possible after the various speakers correct and return their remarks.

ADDRESS OF CHAIRMAN.

By JOHN S. BATES.

The past year has been rather quiet for the Technical Section by agreement in view of the war situation. The real progress has been chiefly through the excellent work of various committees, and through the smooth working of the secretary's office. Service is becoming more popular these days, and we may well gauge one another as members by what each one does for the good of the organization and the industry. At the same time you will find that the more effort you put into the activities of the Section the more personal benefit you will get out of it.

In the reports of Committees and the Chairman's Report to the Association you will find our record of accomplishments, so that I need not repeat.

Your chairman and vice-chairman have been closely identified with the affairs of the Technical Section from the organization meeting in Ottawa four years ago. In passing over the reins to other hands may I thank you most heartily for your support and work. In wishing the organization every success and expansion for the future I cannot do better than quote the words of my colleague, Mr. C. B. Thorne, in asking to be relieved of the vice-chairmanship.

"This of course does not mean that I am going to sit down and do nothing, as I shall always consider it a duty as well as a privilege to be able to work for the Association. In fact, I think that every member should take more interest in the Association than he has done heretofore, because very little work has been done so far, and the Technical Section will be the main institution in Canada for working the pulp and paper industry ahead. This is not recognized in this country to-day, but if the Technical Section does its work and goes ahead with a broad-minded program as it has up to now, people in Canada will one day find out that the technical man is in a better position than any other man in the country to work up the industry and export.

We need to-day to expand Canada's export trade, but before we can do so it will be necessary for the country to recognize the technical man to a higher degree than they have done heretofore. The technical man is the man that will make quality and manufacture cheaply enough to compete with other nations, and the technical man is the only man in the country that can do so."

STUDENT MEMBERSHIP.

The following amendment to the By-Laws of the Technical Section so as to include Student Members, was acted on:

Article 3—Membership.

1.—Membership in this section shall consist of honorary members, members, associate members, junior members and student members. Members and associate members only are entitled to vote and hold office; junior members and student members are not entitled to vote or hold office, but are entitled to all other privileges of membership, and may be invited to serve on committees.

6. (New Section).—A student member shall be seventeen years of age, or over, and shall have an education at least equivalent to a high school diploma or the matriculation of an Arts or Science course. He shall be pursuing a course of instruction in a university or technical school recognized by the Council with some idea of entering the pulp and paper industry after graduation.

9.—The annual dues for membership in each grade shall be as follows: Members, \$10; associate members, \$10; junior members, \$5; student members, \$3 —including in each grade subscription to the official organ of the Technical Section, the Pulp & Paper Magazine of Canada.

With the following explanation by the Chairman, the Amendment was adopted: The idea of the Council was that in the courses of Chemistry and Engineering at the Canadian Universities, there are a number of students who show considerable interest in the pulp and paper industry. They have no connecting link to keep in touch with what is going on. It would be of value to them to come to our meetings and to receive the publications, and would be a means of benefitting them and encouraging them to come into the pulp and paper industry later on.

ELECTION OF OFFICERS.

The Nomination Committee presented the following nominations for officers and councillors for the following year:

Chairman—Mr. J. Stadler, Manager, Belgo-Canadian Pulp & Paper Company.

Vice-Chairman — Mr. F. A. Sabbaton, Manager, Laurentide Company.

Councillors (three to be elected) —Mr. L. H. Shipman, Manager, Research Dept., Spanish River Pulp & Paper Mills. Mr. Geo. Carruthers, President, Interlake Tissue Mills, Chairman, International Committee on Text Books. Mr. S. Wang, Chief Chemist Riordon Pulp & Paper Company. Mr. J. Brooks Beveridge, Manager, Dryden Pulp & Paper Co., Dryden, Ont.

Other nominations were called for, but none were offered. The slate as drawn up by this committee, with the exception of Mr. Wang, who is in Europe, was elected.

REPORT OF THE PROGRAM COMMITTEE.

By OLIVIER ROLLAND, Chairman.

The work of the program committee is materialized in the meetings. It is not necessary to describe it by words; the members can judge by the meetings

themselves; they are the result of its activities.

One word, however, may be said as a remark: much reluctance has been shown by some members to agree to give lectures, and the task of organizing these technical section meetings thus rendered difficult.

Every member should make it a point to deliver at least one lecture relative to the subject he is best acquainted with. The life of our meetings should be found amongst our members.

It has been thought to make it a condition of admission in our section that every member should prepare a paper to be read when asked for; but we have preferred to leave it to the good will of the members, and it is hoped that in the future, members will readily offer their co-operation for the success of the meetings to come.

This report was adopted without discussion except for favorable comment by Dr. Bates on the suggestion that members be more ready to contribute papers to the meetings.

REPORT OF THE COMMITTEE ON MECHANICAL STANDARDS.

By J. STADLER, Chairman.

Your Committee which was formed at the last Annual Meeting as a Machinery Committee, has been changed to a Committee of Mechanical Standards at the meeting of the Council held on November 21st, 1918. This change was considered essential for, after making various attempts to work along the line originally proposed, it soon became apparent that no practical result could be obtained.

The Machinery Committee concentrated its energy with the investigation of barking drums and boiler house equipment, and the various reports received from users of machinery were so very conflicting that any data tabulated on such information would be subjected to severe criticism specially by parties interested in the selling of such machinery. Under the circumstances your committee decided to abandon this work and devote its energy in a different direction; it was agreed that whatever work this committee shall do must be done with full harmony existing between the producer of equipment and the user. With this in view, various preliminary work has been done, but up to now, no final conclusions have been drawn which could be submitted before this meeting, and the committee considered it best to hold off sending out the necessary questionnaires and other matter until after the meeting when this work which had been prepared, could be handled by the new committee.

The committee further is desirous of adding that whatever work may be done will necessarily have to be done on certain details, because if work should be undertaken on a large basis it would involve such an amount of energy that it would require a special staff in order to have the information collected and carefully prepared, and we do not think that any such data would have any practical value.

The committee considers that the main issue of all equipment and machinery must be left to the management of each individual organization because if reports of a most detailed and comprehensive nature were prepared by this committee, we believe that a progressive management would not hold itself to in-

vestigations made by this Association, but would, to a very large extent, work out its own solution in the equipping and management of its factory.

Your committee therefore is of the opinion that only work of a specific nature should be done which is general to all mills, and therefore has under preparation necessary data for producing standard steel shapes for cable conveyor lining, specifications for most suitable Babbitt metal in connection with paper mill work, specifications for acid resisting bronze and reports on bearings with special reference to methods of lubrication.

The committee considers that suggestions shall be made at this meeting as to what detailed line should be put on the list for investigation.

Mr. Stadler continued: I would like to add that inasmuch as a change has been made in the Committee on Mechanical Standards, the work which was done previously, naturally has been discarded, because we considered it was not practical. Now, the work that has been done since, of course, has been delayed a great deal on account of the fact that owing to war conditions, every one was doing a little more work than we would ordinarily do, but at a meeting of the committee which we had last night, we were fully in accord that whatever work we would do in the future would have to be done with the idea of its being of an educational nature, which means we don't want to impose. We want our Committee on Mechanical Standards to expose a field for new material. If the industry requires something which it cannot get at the present time, which perhaps individual mills cannot get, if we all get together and state our wants the manufacturers of certain materials can be induced to cover our requirements, because they will economize considerably in quantity production of special materials.

The next thing is that the Committee desires that the standards of paper mill machinery must be raised. While in the past anything was good enough, as the technical men come into the mills, the work improves, and we want the manufacturers to appreciate that the industry is looking for something a little better. That is the main object of the work of the committee as it now stands, and we have every reason to believe that a good deal can be accomplished in the near future.

Permit me to add, it will be just as well if everyone reads the report, and makes his suggestions to the committee in writing. That would be a great help in accomplishing results.

WOOD DISTILLATION IN GERMANY.

Sawdust, chips, and shavings are largely utilized in Germany for the production of alcohol. It is estimated that from half a million to one million tons of such waste material are produced annually in that country. Four distilleries are at present being run on these raw materials, each having fifty-one autoclaves of 1,000kg. capacity. The cost of production is said to be high when the residue cannot be used as cattle fodder or the waste liquors used for other products. The material is heated in an autoclave with either sulphurous or hydrochloric acid for from twenty to forty minutes at 265° C., at a pressure of 7 atm., then quickly drawn off, neutralized and run into the fermenting vat, beer-yeast being used. Distillation completes the process. — Zeit fur ange Chemie.

PULP AND PAPER NEWS



Gunner Archie Reid, who was accountant with the Provincial Paper Mills Co., Toronto, and enlisted with the Cobourg Heavy Battery and was later with the Trench Mortars, Second Canadian Division, has returned from overseas and will shortly resume his former position. His many friends are glad to greet him on his safe return. Pte. C. W. Reynolds, of the Provincial Paper Mills Co.'s clerical staff, who joined the 4th Mounted Rifles, of Hamilton, and was transferred to the 102nd Battalion, saw some stiff fighting while abroad. He was captured after the battle of Cambrai, and was a prisoner of the Germans for several months. He has once more joined the Provincial Co's office force.

W. B. Burgoyne, who is editor and proprietor of the Standard, St. Catharines, Ont., and is an ex-Mayor of that city, has presented his famous rose garden to the city as a public park, and to create a perpetual source of supply of roses for the local hospitals. St. Catharines is known as the Garden City, and this generous donation of Mr. Burgoyne, will do much to assist this progressive urban community to maintain this euphonious name. Thus Mr. Burgoyne has signalized the "dawn of peace year" by doing something both appropriate and practical for the city in which he has long been an honored resident.

The press photographers of Toronto have organized the Canadian Press Photographers' Association, with headquarters in Toronto. The object is to band themselves together for mutual protection and co-operation and to frustrate imposters. The new body holds a charter from the Ontario Government, and has issued a badge to its members bearing the name of the organization. Alex. J. McLean has been elected President; Charles D. Roos, Vice-President, and William James, Secretary-Treasurer. Messrs. Pringle and Booth are also charter members.

Norman A. Sinclair, who for the past fifteen years has been manager and a director of the firm of Warwick Bros. and Rutter, Limited, manufacturing stationers, Toronto, left during the past week to take up his residence in New York City, where he has been appointed sales manager of Charles E. Weyand & Co., who are among the leading manufacturers of fine stationery in the United States.

James McLenaghan, of Toronto, who died recently in Los Angeles, Cal., in his seventy-third year, had a stirring business career, and was in his early days in charge of the Fort Garry post of the Hudson's Bay Company. Many years ago he operated a small paper plant in Manitoba, which was the first industry of its kind west of the Great Lakes.

The Ross Can Company of Toronto, who are removing their plant to Bowmanville, has lately been victimized by an unscrupulous representative, who posed as an agent for the firm, quoted prices and got orders for which immediate delivery was promised. The Ross Co. are endeavoring to apprehend the fictitious salesman, and have notified the public through the press.

A charter has been granted to McAlpine Publishers, Limited, Toronto, with a capital stock of \$100,000, to carry on the business of printers and publishers, engravers, book binders, paper makers, envelope and paper bag makers, and stationers. Among the incorporators of the company are A. W. Briggs, H. B. Frost, E. M. Dillon and R. T. Birks, all of Toronto.

The new sulphite pulp mill of the Fraser Companies, Limited, at Edmundston, N.B., is now operating satisfactorily, and will soon be producing up to capacity.

While working in the board room of the Lake Superior Paper Co. at Sault Ste. Marie, Ont., an eighteen-year-old boy, named John Jackson, was instantly killed. His clothing became caught and he was hurled over the shaft against which he is said to have been leaning. His head struck the cement floor and death resulted instantaneously.

O. H. Moore, manager of the Hinde and Dauch Paper Co. of Canada, has been elected a director of the Toronto Rotary Club for the coming year. Mr. Moore is at present in the south spending a well-earned holiday of a few weeks.

It is understood that the output of groundwood pulp of the McLeod Pulp Co. at Liverpool, N.S., for the coming year, has been purchased by the New York Times. The price paid is said to be in the vicinity of \$25 per ton.

R. J. C. Stead, of Calgary, has been appointed publicity agent for the Department of Immigration and Colonization at Ottawa at a salary of \$4,000 per annum, and will shortly enter upon his new duties.

Chester McDiarmid, who has been spending some months in Montreal, has returned to Toronto, and has resumed his former position as business manager of the Toronto News. He is a former President of the Ad. Club of Toronto.

G. Tower Ferguson, of Toronto, has in his possession a copy of the Edinburgh Evening Courant, dated December 24, 1745. The sheet is about nine inches in length and six wide, and contains but two pages, which was about the normal size of newspapers 174 years ago in the British Isles, when newsprint was not nearly as plentiful as it is to-day.

C. W. Cavers, who is a former well known newspaper man of Toronto and Montreal, and has returned from overseas, being a member of the 50th Battalion, has been appointed Director of Information of the Soldiers' Settlement Board, Department of the Interior, Ottawa.

J. R. Booth's depot camp in the Northern Ontario district produced a thousand bags of potatoes, according to reports received in Ottawa. The employees of the camp worked during the spare hours to produce as many vegetables as possible, and the officers of the firm are very proud of the splendid potato yield.

(Continued on page 212).



The Markets

CANADIAN MARKETS.

Toronto, February 17.—There is some slight improvement in the conditions of the paper market and business is picking up quite a bit although there is still manifested the disposition to hang back. It is predicted that, with the advent of the month of March, there will be radical changes in the situation and confidence will reassert itself. The labor problem is then expected to become more tranquil owing to the many public works that will be proceeded with and much of the agitation that is now going on for higher wages and shorter hours will perhaps have spent itself. Some mills are very busy and other are quiet which leads the observer to remark that conditions are spotty. For instance, one wrapping paper company stated this week that they were turning down orders while several mills were looking for the same. A large book paper concern cannot keep up with the business in hand and has turned over several orders in hand to other mills to help them out in the present rush. Catalogue houses and manufacturing organizations, which get out printed matter, are preparing to put on sail and one large department store has been encouraging art by inviting the submission of artistic designs for their coming catalogue, offering no less than \$2,500 in prizes, which drew forth one hundred and sixteen suggestions from all parts of Canada. The Society of Graphic Arts conducted the interesting contest.

In the paper box line matters are quiet and there is not much desire on the part of large consumers to place business ahead. They are ordering only for present needs as they anticipate a fall in the box-board prices in sympathy with conditions across the border. There is no change in the pulp situation and the market is rather quiet with prices holding about the same. As soon as the export business looms up stronger, ocean tonnage is freed and transportation rates across the Atlantic come down more as they are doing from week to week, it is anticipated there will be no difficulty in getting rid of any surplus. The number of inquiries that come in all the while from different countries, grow constantly and everything betokens much activity in export within a few weeks. The

manufacturers are, therefore, not dismayed, and that a spirit of confidence prevails is revealed in the fact that nearly every week sees the announcement of some new company formed or the extension of plant or buildings on the part of some of the existing concerns discussed. Naturally they will proceed cautiously, but as soon as the peace terms in Europe are signed, a number of these projects will take definite shape. In the meantime, the signs witnessed all around are regarded as healthy ones and, with the close of war there will be a stop to the paper investigation business. That the makers of book papers have not been making as much money during the past year as in years gone by and that they have not been charging too high a figure for their product, is disclosed in the reports presented at annual meetings. The sulphite producers also state they will welcome any investigation which Mr. Pringle cares to institute and will show that they are up against as heavy costs and, in some respects heavier, than they were a year ago. There is a constant advancement in wages, freight rates, the outlay for raw materials and for pulpwood.

In the rag and paper waste paper arena there is a good demand for blues and flock and satinettes. Shoe cotton and blue overall cuttings are in fair requisition and prices are firm. On account of the quiet state in some box-board plants a lot of mixed papers has been thrown on the market as well as news and manilas and this has created a still further drop in quotations. White blanks are moving at figures that are only fair. Magazine, book and ledger stock is going nicely but dealers say the only real business that appears in the country to-day is the export and to this they are giving great attention.

In an investigation conducted by one large woods operating company it was stated that the wages of men are higher to-day than ever, while, except on a few items there has been no come down in the expense of maintenance, which is from seventy-five to one hundred and fifty per cent greater than it was at the time of the outbreak of the war. There will be no change for several months and, in the meantime, the weather conditions are disappointing. It is difficult to get pulpwood. If some relief in the way of snow

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and ice does not come during the present month there will be a shortage in wood supply although there is an abundance of labor.

Newsprint mills are not worrying very much about the price problem at present since the Commissioner has extended the figure of 869 for two months. Any further inquiries that may be made by Mr. Pringle, who will report back to the Appeal Tribunal, are expected to show that costs are to-day higher than ever. The demand has fallen off somewhat and production increased. If the law of demand and supply prevailed the rate problem would very soon regulate itself. It only remains for manufacturers, jobbers and large consumers to carry on in the spirit of optimism for a few weeks longer in order to come triumphantly through the period of reconstruction and place the paper business in Canada in the front rank of our national industries. All plants are preparing for the bigger business that assuredly awaits them. Realize the present is only a temporary lull and that the bottom has not dropped out of things as a few pessimists would lead the public to believe.

NEW YORK MARKETS.

New York, February 15.—Inquiry for the various grades of paper has increased this week, and while actual business has undergone no material expansion, the tone of the market is improved and indications are that the long awaited revival of activity has commenced. Jobbers and consumers have displayed decidedly more interest, and mills doubtless have received more orders than during any similar length of time for some months. The volume of buying, however, has been restricted for buyers are still in a cautious frame of mind and limit purchases mainly to amounts of paper immediately needed.

A canvass of the printing trade in New York this week showed that the average print establishment is busily engaged. This alone would seem to foreshadow an active demand for paper very soon. The consumption of paper all along the line is increasing, which of course is bound to be felt by manufacturers in the way of more business sooner or later. Reports also are heard regarding a steady expansion in the export trade in paper. South American consumers are said to be coming more and more into this market and to be buying with considerable freedom. Such factors as these naturally aid in maintaining the equilibrium of the market and in increasing the confidence of manufacturers regarding the future. Optimism is expressed on all sides concerning the outlook, the usual phrase used being that "an active market for paper is inevitable."

Possibly the strongest market at present prevails for tissues. Government demand for roll tissue apparently is the fundamental cause of the firmness of the market, but demand from other sources is also comparatively brisk, and there is a distinct uptrend in prices. No. 1 white tissue freely commands around \$1.20 at the mill, while No. 2 white and manila tissue is selling at \$1.05 and higher.

Newsprint is steady and is moving in moderate volume. Publishers on the whole are not absorbing as large supplies as they were several months ago, but mills are disposing of sufficient of their production to prompt them to hold firm for full quoted prices. The trade is watching developments surrounding the ef-

forts of newspaper publishers to have the newsprint price case reopened, for it is appreciated that this may have an important bearing on future values of print paper.

Book papers are rather quiet, yet prices are maintained and judging from the delay experienced by some consumers in getting supplies, mills are more actively engaged than is commonly presumed. Wrappings are in fair demand and quotations are at about the same levels. There is little change in the situation for fine papers. Current demand is poor. Buyers are taking solely what they directly require, and most mills are in want of business. This is borne out by reports to the effect that the largest writing paper manufacturing concern in New England has only something like four or five of its twenty odd mills in operation. Prices nevertheless are upheld, and manufacturers show no disposition to lower them in an effort to stimulate buying. They insist that present production costs will not permit them to cut prices and, rather than sell paper at a loss, they are refusing to make the paper.

Boards are in restricted call. Box makers have not yet begun to cover their spring requirements and the present movement is confined chiefly to quantities immediately needed. Quotations are maintained at a basis of about \$52.50 for chip board.

Groundwood—There is very little demand for groundwood. Consumers as a rule appear to be eking out contract supplies in such a manner as to preclude the necessity of their seeking additional pulp in the open market, and few sizable sales of spot pulp are being made. Prices are easy in tone, and offerings at \$26 per ton at the grinding mill have been frequently recorded. The open winter has permitted most grinders to operate steadily and there are indications that large stocks are held unsold. The danger of a wood famine and a resultant shortage of pulp, however, prompts manufacturers to hold supplies with more firmness than they probably otherwise would do.

Chemical Pulp—Quietness still rules in the chemical pulp market. Inquiry from consuming sources has improved somewhat but actual buying has involved only limited quantities of pulp and at best the current movement is of less than normal proportions for this time of the year. Prices rule on practically the same levels. Some "distress" lots of pulp have been disposed of at concessions, but the great majority of sellers are holding available supplies at full quoted figures. Foreign grades especially are firmly priced. Quotations cabled from the other side are higher, this being due, it is said, to the fact that England has advanced her prices on coal which is being shipped to Sweden. Nominally 9.00 cents per pound is the quotation named on bleached sulphite, while No. 1 unbleached is quoted at between 5.75 and 6.00 cents. Domestic pulp is held at 6.00 to 6.25c for bleached sulphite, 4.50 to 4.75c for easy bleaching, and 3.50 to 3.75c for news sulphite. Domestic kraft is available at 4.50c a pound at the pulp mill and domestic bleached soda pulp at 4.25 to 4.50c.

Rags—Paper manufacturers are doing very little buying of rags for the moment. Offerings of dealers are generally ignored, or when a mill evinces interest, invariably a counter offer at a reduced price is made. The truth of the matter appears to be that consumers simply are not in immediate need of rag stock and

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therefore are willing to buy only such material as they find available at bargain prices. Dealers, however, are imbued with confidence that a period of activity lies ahead and are not sacrificing their holdings, being satisfied not to do business at the figures now obtainable while awaiting the entrance of manufacturers into the market for more normal supplies. Prices are mainly nominal. Third and blues have sold at 3.00 to 3.25c a pound f.o.b. New York, while No. 1 repacked whites are available at 5.75 to 6.00c New York, and black cotton stockings at 2.75 to 3.00c. Roofing rags have eased off in price. Numerous felt mills have retired as buyers, and roofing material is now selling in a restricted way at a basis of approximately 2.00c per pound f.o.b. shipping point for No. 1 packing.

Paper Stock—Demand for old papers is light and prices in most cases have declined. Low grades in particular are weak, owing to the fact that board mills have let up in their purchasing. High grades are held with a relatively greater degree of firmness but there is merely a routine call from consumers, and most sales have been made at the lower edge of quoted values. Hard white shavings are quotable at 5.25 to 5.50c f.o.b. New York, soft white shavings at 4.35 to 4.50c and ledger stock at around 2.75c. Flat stock has sold in at least some quarters at 1.30c New York, though most packers have demanded better figures. Folded news is available at 60c per hundred pounds f.o.b. New York, and No. 1 mixed paper at 40c, while there seems no doubt that some dealers could be induced to take orders for news and mixed paper at lower prices. Kraft paper is off a shade, revised quotations ranging around 2.85c a pound New York, while manilas are selling at 80 to 85c.

Bagging and Rope—Old manila rope is holding its own in price under a moderate movement into consuming channels. Mills are placing orders for limited tonnages with fair regularity and most current sales are going through at between 4.75 and 5.00c a pound f.o.b. New York. Scrap bagging has ruled dull this week, with such stock as has been moved realizing no more than 2.50c a pound New York.

MANY PAPER COMPANIES HOLD ANNUALS.

The annual meeting of the Lincoln Paper Mills Co., whose plants are located at Merriton, Ont., was held recently, and satisfactory reports presented on the operations of the past year. W. D. Woodruff was elected President and Managing Director; A. S. Woodruff, Vice-President, and Peter Mitchell, secretary. The latter replaces W. M. Shea, who passed away a few weeks ago, after many years' service with the company. Mr. Mitchell has been identified with the organization about a year.

At the annual meeting of the Hinde and Dauch Paper Co. of Canada, which was held in Toronto recently, good reports were presented on the activities of the past year, and the outlook for the coming one is regarded as favorable. Sidney Frohman, of Sandusky, Ohio, was elected president; Ralph King, of Toronto, Vice-President; John Watt, of Toronto, Treasurer; R. K. Ramsey, of Sandusky, Ohio, Secretary; T. E. Lloyd, of Toronto, Assistant Secretary; O. H. Moore, of Toronto, Manager; Directors, Messrs. Frohman, King, Watt, and Ramsey, R. M. Taylor, of Sandusky, O. H. Moore and E. R. C. Clarkson, of Toronto.

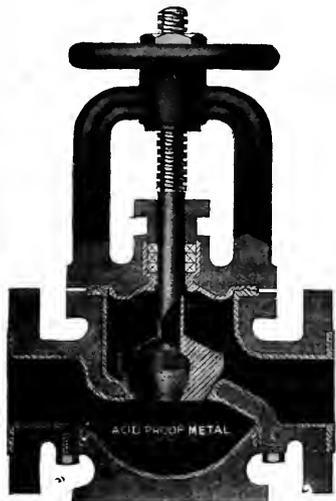
The annual meeting of the Provincial Paper Mills Co., Limited, of Toronto, was held this week. In view of the fact that the past year was a trying one in the manufacture of paper occasioned by labor conditions, shortage of supplies, fuel and congestion in the spring in the matter of transportation, a satisfactory report was presented. Owing to fire part of one of the mills of the company was closed down for some time, and at Mille Roches, there were several interruptions to operations owing to ice and power difficulties. The net profits for the year ending December 31st last therefore, fell off somewhat. The net profits in 1918 were \$404,142, to which may be added \$5,290 received as interest and dividends on investments, bringing the total for distribution up to \$409,433. This compares with \$463,899 in 1917 and \$437,801 in 1916. After allowing \$7,656 for interest on bonds and notes, \$14,659 to cover fire loss at the Barber mill, and \$75,000 for depreciation on buildings and plant, the sum of \$312,117 remained for dividends. The usual seven per cent was paid on the preferred stock, and four per cent on the common stock, leaving the year's surplus at \$113,117. The assets of the company show an expansion during the year of \$330,000. The property account has grown in value from \$4,198,622 to \$4,231,202, while current assets are up from \$911,744 to \$1,162,184. Under the latter heading the principal item is investments which represent the holdings of the company in the Port Arthur Pulp and Paper Co. A year ago the interest was represented by a loan of \$200,000 and stock holdings of \$202,000. Since then the loan has been paid off and the company holds stock to the value of \$502,000. The capital stock of the organization still stands at \$2,481,300 common, and \$1,700,000 preferred. The reserve for depreciation on plant and buildings has been increased from \$75,000 to \$150,000.

BIG GAIN IN EXPORTS.

Canadian exports of paper, pulp and pulpwood for December, 1918, reached a total value of \$7,235,699, as against \$5,930,162 for December, 1917, an increase of \$1,325,537. For the first nine months of the fiscal year, their value amounted to \$72,624,428, as compared with \$54,509,136 for the corresponding period in 1917, a gain of \$18,115,292. The details follow:

Month of December	1917.	1918.
Paper and mfgs. of.....	\$ 3,424,906	\$ 3,884,759
Chem. pulp.....	1,562,549	2,314,212
Mech. pulp.....	337,851	288,364
	\$ 5,325,306	\$ 6,487,335
Pulpwood.....	604,856	748,364
Total.....	\$ 5,930,162	\$ 7,235,699
	1917.	1918.
Nine months' period		
Paper and mfgs. of.....	\$27,564,980	\$33,380,632
Chem. pulp.....	14,634,884	24,074,950
Mech. pulp.....	5,374,653	3,673,618
	\$47,574,517	\$61,029,200
Pulpwood.....	6,934,619	11,595,228
	\$54,509,136	\$72,624,428

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PULP & PAPER NEWS—(Continued).

A safe weighing 260 pounds was recently stolen from the premises of the Thompson Publishing Co., 75 Bay Street, Toronto, by robbers who evidently thought they had made a big haul. They were, however, sadly disappointed, for it contained only five dollars' worth of postage stamps and some personal papers. The Thompson Co. had luckily made their bank deposit a few hours earlier.

It is learned that J. J. Carriek, of Port Arthur, who in December, 1916, was awarded the Pic River Concession, consisting of 1,400 square miles, by the Ontario Government, paying for the right to ent pulp wood fifty cents per cord, and the usual fees, now has plans in progress for the construction of a pulp and paper mill, which will cost several million dollars. It is probable that work will start on the new enterprise in the spring. Hardy S. Ferguson, of New York City, is the engineer and architect. The Hydro-Electric Commission of Ontario has promised Mr. Carriek that the Nipigon river power development scheme will be proceeded with, and be able to supply 3,000 horse power in the spring of 1920.

P. L. Lyford, of Clarke & Lyford, forest engineers, Vancouver, has returned to that city after an ex-statement of claim. Judgment in favor of the Pulp Wood Co. against plaintiffs for \$444.72, in respect of the claims set forth in paragraphs 5 and 7 of the prayer of the counter-claim; the other claims in counter-claim dismissed without prejudice to any proceedings under the Saw Logs Driving Act in respect to claims set forth in paragraphs 1, 2 and 3 of

tensive trip through the United States. He visited New York, Boston, Washington, New Orleans, Texas and California.

The editor called on George L. Hardy, paper mill engineer, in New York recently, and found him busy with plans for the new 90 ton groundwood mill for Price Bros. & Co., at Chicoutimi. The cost is estimated at \$1,000,000 and the council of Chicoutimi has granted tax exemption for ten years to Price Brothers for the construction of the plant. The company have applied for the privilege of increasing their capitalization from \$5,000,000 to \$10,000,000.

In the action of the Central Contracting Co., Limited, vs. The Russell Timber Co. and the Wood Pulp Co., recently heard before Mr. Justice Rose, in Toronto, the action against the Russell Timber Co. was dismissed with costs. As against the Wood Pulp Co. the action was dismissed without prejudice to any claims which plaintiffs may have against the Pulp Wood Co. under the Saw Logs Driving Act., in respect to matters alleged in paragraph seven of the said prayer. Plaintiff to pay Pulp Wood Company's costs of the action, but not of the counter claim. No costs of the counter claim.

Charles A. Goodfellow, for the past sixteen years publisher of the *Whitby, Ont., Gazette and Chronicle*, passed away on February 16, in his fifty-fourth year, after a few days' illness. He was a public spirited citizen and held several responsible offices. Mr. Goodfellow was also a former President of the Midland Press Association.

J. F. Ellis, of Toronto, President of the firm of Barber-Ellis, Limited, and also the Canadian Paper Trade Association, left last week in company with Mrs. Ellis, to spend a few weeks in Florida.

Progress in connection with the re-auditing of the books of Canadian paper mills so as to bring the costs up-to-date is being made by the staff of the official auditor, Mr. Geoffrey Clarkson. Up to early this week no date had been set by Controller Pringle for the resumption of the newsprint inquiry.

James Logie, of Toronto, who represents the Canada Box Board Co., and his brother, Ben Logie, of the E. B. Eddy Co., Toronto, have returned from Sherbrooke, Que., where they recently attended the funeral of their brother, Harry Logie, who was editor of the *Sherbrooke Record*, with which paper he had been identified for the last twenty-two years. The late Mr. Logie was a prominent Mason and was ill only a short time. He leaves a wife and three children. For many years he spent his holidays in Toronto, where he was well known to the paper trade.

Robert Rolland, of Montreal, formerly of Toronto, has been appointed representative of Grace and Co., of New York City, and has entered upon his new duties.

E. A. Crippen, of Toronto, has been appointed selling agent in Canada for the Ashuelot Paper Co. of Hinsdale, N.H., the Warren Mfg. Co. of New York City and the Wolverine Paper Co., of Otsego, Mich., which firms specialize in many lines.

E. A. Schofield, of the Schofield Paper Co., Limited, St. John, N.B., was in Montreal and Toronto last week calling upon the members of the trade.

F. A. Ritchie, of Ritchie and Ramsay, coated paper manufacturers, Toronto, left last week on an extended winter holiday, which he will spend at Trinidad and other West Indies Islands.



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VOL. XVII.

GARDEN CITY PRESS, Ste. Anne de Bellevue, Que.

No. 9

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EDITORIAL

COMPULSORY EDUCATION.

The newspapers throughout the Province of Quebec have been publishing an unusually large number of articles and letters regarding compulsory education in this province. The discussion is entered into by both Protestant and Catholic writers and addresses have been made in both French and English stating thoroughly the arguments for and against a provincial law requiring school attendance up to a certain age. That there is sufficient ground for this agitation no one will question. It is stated that in the city of Montreal more than 90,000 children of school age do not attend the schools. School statistics are not particularly accurate and the chances are that attendance is even poorer than published figures would indicate. It is said on good authority that there are not more than one-half as many pupils in the fifth, sixth and seventh grades as there are in the lower grades and the attendance diminishes even more rapidly beyond the seventh grade than below it.

There is a law which prohibits the employment in factories of children under fourteen years of age and in Montreal there is a restriction on the selling of newspapers by girls. The law, however, is a negative one and while it enumerates things that must not be done it fails to strike for that which it is intended to accomplish, namely, attendance at school. School attendance finds support for its compulsion in three principal points. First, the increased earning capacity of the intelligent workmen; second, the training for intelligent citizenship; third, the incentive to maintain or elevate the standard of living. These three points are much like the three legs of the stool referred to by Andrew Carnegie; it is difficult to say which one is the most important. It is certainly true that children who leave school early do so at just the age when the guidance of the teacher and the instruction in properly selected subjects is most important and when the child has reached a state of maturity when this portion of his education could best be assimilated.

In urging compulsory education it is not sufficient simply to provide a law which will require school attendance. There are some attendant difficulties which are nearly, if not quite, insurmountable by a considerable proportion of the population. The economic condition of some families in many communities is such that the income of every member of the family is needed to meet the family expenses. To require attendance at school by some of these immature wage earners, without making some provision for,

or in some other way maintaining, the family income might lead to a second condition which would be worse than the first. With compulsory education there should go hand in hand provision for free schools and free text-books. Insistence on the latter would doubtless lead to more uniformity in regard to books and standards and increased efficiency of our schools would result, as well as other advantages.

In arguing for compulsory education, free schools, and free text-books, we have still failed to consider what is doubtless the most important feature of the whole difficult problem. There is no doubt but that many pupils leave school because they are forced out by the economic circumstances of the family. It is impossible to discover the exact proportion, but we believe a close investigation would show that fully as many children leave school because the class-room is not sufficiently attractive. Children are lively creatures, or ought to be, and there is a dullness and lack of inspiration about the ordinary school-room that is decidedly distasteful to them. They want to be where something is doing and prefer to have their share in the doing of it. There is little chance for expression of the individual permitted by our present school methods. Perhaps this condition cannot be entirely overcome, but there is certainly room for more inspiring methods of instruction and for the introduction of fundamental development along the lines that will guide pupils into a better appreciation of the duties and opportunities of the citizenship upon which they are entering. Equal suffrage makes it possible to treat boys and girls alike in this regard and the rather recently acquired position of women in industry makes it appropriate that matters of social and economic interest be discussed and taught in mixed classes.

Our schools have been too distinctly academic, which is one reason for the small attendance at the age when children are beginning to acquire the ability to do things. At this step we should introduce opportunities for them to learn, through vocational education, some of the fundamental principles of the basic trades. This not only fits them for some definite work, but instills an appreciation of carefulness and accuracy that is sadly needed. Classes in vocational training also furnish an excellent opportunity for the skilful teacher to impress principles of co-operation and the interdependence of the many factors that make up our various industrial and social organizations. We cannot, however, afford to over-emphasize this feature of education, important as it is in helping to hold chil-

children in school until they have really benefited by their school work. Training to make a living is only a part of the true object of education, that which is probably even more important is a training by which the child will come to realize the position of the individual in the life of the community and the nation. It is this development of the sense of social obligation that we must provide for in revising our school methods and it seems that we can find no better time to introduce it than just now when the tendency is toward wider educational opportunities and especially since the tendency seems to be a little too strongly toward over-emphasizing the idea of vocational or industrial training.

PASS IT ALONG.

Nearly everybody is holding off on purchases because he expects prices to go down. Prices in some cases have receded slightly, particularly in some lines of food stuffs. Most manufactured articles, however, have changed very slightly, if at all, in price. This seems primarily due to the large proportion that the cost of labor bears to the cost of manufacture, and it seems hardly possible that any considerable change in such prices could be expected for some time. In withholding orders for goods there is an effect on the community which does not seem to be fully considered and that is the expense which is really being accumulated because of the slackness of work in manufacturing plants. Periods of idleness tie up the invested capital without any return, but more important than this is the enforced idleness on a considerable portion of the community. This must be paid for, either out of the community's pocket, as charity, or out of the vitality and character of the workmen deprived of their jobs. Idleness always reacts unfavorably both on the individual out of work, and on the tone of the community where unemployment is prevalent. If each one would consider that his own business can only be continued through the purchase of his product by others, and that unemployment in some other fellow's factory is the accumulated result of withholding orders by himself and others, we believe that more people would make a strong effort to keep placing orders for needed supplies, with greater regularity. Thus, even though each individual order were smaller than might be the case in normal times, yet their accumulated bulk would be very considerable and the continuity of business in all lines resulting from keeping orders moving, would much more than compensate for any small financial advantage that might result to one concerned for withholding orders until a definite drop in prices might occur. The trouble is that in everybody holding back there is too great a liability for a lot of worthy manufacturers being put out of business, after struggling along with commendable success through a recent period of difficult times.

Manufacturers need to stand by each other in this coming period of even more uncertain conditions and it is only by keeping business moving all around that we can expect to maintain stable conditions.

WHAT FIRES MEAN TO LABOR.

In answer to a question as to whether it is possible to estimate the loss of time and wages of workmen due to the burning of factories and mills, the Commission of Conservation says that such a compilation is impossible. In his letter to the Pulp and Paper Magazine, James White, of the Commission, says:

"It is evident that the economic loss in this direction must be considerable, and especially so during periods when labor is not readily absorbed by other industries. If any argument is needed as to the importance to workmen of reducing our present fire waste, it should be sufficient to point out that an expenditure of \$65,000,000 a year on fires represents the wiping out of the combined labor of more than 50,000 men for a whole year, at four dollars per day. Then, too, this expenditure upon fires is surplus production. It has to be accumulated by producers after earning livelihoods for themselves and their families, and paying their share of the other burdens of society. It is a tax which enhances the cost of every necessity and lessens the purchasing power of every day's labor."

To paraphrase Hamlet, there is surely something rotten in the state of affairs when public opinion is not strong enough to induce the parties involved in a pulp mill strike to come together. An organization owes too great an obligation to the community to make it right for either men or management to simply sit down and say they will have no dealings with the other side. The money loss to the community is bad enough, but the loss of confidence and sympathy and interruption of business and social relations and the strain of unemployment on spirit and pocket-book, are matters not to be lightly considered. The pulp and paper industry has had a fine record in respect to labor difficulties. This is no time to spoil its good reputation. Let those who are in difficulties come together and talk it out to a solution, rather than stand apart and attempt to fight it out to what may be a separation. There has been fighting enough to last the world a long time. Let's keep Canada at peace.

Belgium looks longingly at the bit of Dutch land which separates her principal port from the sea and would like to acquire peaceful possession of it. Why not let the League of Nations buy it for an international capital, owned by the world at large, as the seat of the United States Government, the District of Columbia belongs to that whole country? It would be an honor to Holland to supply the location, a safeguard to Belgium's port, and a forward step in establishing the League with a regular "home office."

Soda Pulp Manufacture

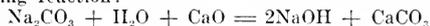
By E. SUTERMEISTER, S. D. Warren Co., Westbrook, Me.

This is the first installment of the second article in a series on pulp and paper manufacture. The Manufacture of Groundwood Pulp was described by G. W. Dickson in the Pulp and Paper Magazine for January 2 and 9, 1919. There undoubtedly is an excellent prospect for the development of soda pulp manufacture in Canada, and Mr. Sutermeister's valuable contribution to the literature on this subject will be read with great interest.—Ed.

Cooking Liquor and Its Preparation.

The cooking liquor employed in the soda process is a solution of caustic soda which, because of its method of preparation, contains a small amount of sodium carbonate. As the alkali used in the process is recovered in the form of carbonate, as will be described later, it is essential that it be converted into caustic soda on the premises and the universal practice therefore is to prepare the caustic soda solution in the mill where it is used. The loss of alkali, which cannot be entirely avoided during the cycle of operations, is generally made up by adding fresh soda ash in the causticizing room, though if the mill is favorably located it may be replaced by the use of a strong caustic soda solution from a near-by electrolytic plant.

Practically the only method employed in making caustic soda for pulp mill use is by acting on soda ash in solution with quick lime according to the following reaction:



This reaction never goes to completion as it stops when a certain point is reached dependent on the ratio between the carbonate and hydroxyl ions. Considerations of physical chemistry have led to the conclusion that the lower the strength of the soda ash solution the higher will be the percentage of alkali converted to caustic. This has been proved experimentally by G. Lunge,¹ who gives the following results of his tests:

Experiments at Ordinary Pressure.

Liquor before Causticizing	Specific Gravity	After causticizing the liquor contained as NaOH the following percentages of the total Na ₂ O	Temp.
		Exp. 1.	Exp. 2.
2	1.022 at 15°	99.4	99.3
5	1.052 " "	99.0	99.2
10	1.107 " "	97.2	97.4
12	1.127 " "	96.8	96.2
14	1.150 " "	94.5	95.4
16	1.169 " 30°	93.7	94.0
20	1.215 " "	90.7	91.0
Experiments under High Pressure at	Between 148° and 153°.		Temperatures
10	1.107 at 15°	97.06	97.5
12	1.127 " "	96.35	96.8
14	1.150 " "	95.6	96.6
16	1.169 " 30°	95.4	94.8
20	1.215 " "	91.66	91.61

These tests, as well as those by other experimenters, have proved that an increase in pressure and temperature will not produce a better yield of caustic soda provided the concentration is the same. It is therefore the general practice to causticize at atmospheric pressure.

The type of equipment used for causticizing varies greatly in the different mills; in most installations it consists of a series of wrought iron tanks in which the lime and soda ash are boiled together and agitated, and a second series of tanks which serve as settling basins and for washing the sludge. The boiling tank may be of any convenient shape, and both vertical, round, open tanks, and horizontal cylindrical closed tanks are used. The essential features are adequate means of agitation, openings for the admission of lime, piping for the introduction of steam either directly or indirectly through coils, adjustable siphons for drawing off the clear caustic liquor, pump connections for the discharge of the sludge and an opening for the occasional washing out of stones and sand. The lime may be conveniently added from a hopper, located over the boiling tank, in which the right amount of lime for a single boil is placed. It may be dumped directly into the tank in which case stones or unburned cores, will collect in the bottom and may interfere with the agitator, or it may be placed in a perforated basket, which is fastened to the upper part of the boiling tank in such a position that the soda ash solution rises above the floor of the basket. The slaked lime in this case falls through the perforations, and the stones are retained in the basket from which they may be easily removed. If the lime is put directly into the tank the pump connection must be at such a height above the bottom of the tank that stones may not get into it and cause damage.

The arrangement of a plant of this type should be such that as much of the work as possible may be done by gravity. The lime hoppers and storage tanks for leach liquor should be above the boiling tanks, and the tanks for storage of strong and weak liquor should be below, so that the solutions may be run down from the boiling tanks without pumping.

The actual boiling of a tank is conducted for various lengths of time dependent on the nature of the lime, the output required, the efficiency of agitation, etc. Tests on a small scale have proved that thorough agitation to a large extent replaces boiling and that the boiling therefore serves largely as a means of agitation. Of two tests, one of which was kept in violent boiling for an hour and the other vigorously agitated for the same length of time, but not heated above 81° C., the first gave a causticity of 93.0% and the second of 92.7%. It has been proved in practical working that increasing the efficiency of agitation by adding more wings to the shaft or increasing its speed has enabled less lime to be used in obtaining the same amount of caustic soda. If the lime is of good quality and agitation is adequate the boiling need not be continued more than fifteen to twenty minutes, though the agitation should con-

¹G. Lunge, Sulphuric Acid and Alkali, 2nd Ed., Vol. II., p. 750.

time at least half an hour longer; if the lime is of poor quality and hard to slake the boiling should be continued for fully an hour, but it is doubtful if much is gained by boiling for more than that time.

A satisfactory lime for causticizing should be high in available calcium oxide, and give a sludge which settles rapidly and compactly. The chemical analysis of a lime is not an entirely satisfactory means of judging its value for causticizing since the total calcium oxide is not always readily available, due to the presence of silica and to over burning. A better opinion can be formed by making a miniature causticizing test with carefully weighed quantities of soda ash and lime, being sure to have the former in excess. An analysis of the liquor produced in this experimental boil then gives a direct proof of the causticizing value of the lime. High grade lime by this test should causticize 100 lbs. of soda ash with 58—60 lbs. of lime.

The proportions of lime and soda ash used in actual operations vary with the quality of the lime and the strength of the solution it is desired to produce. With a lime of fair quality the following results were obtained when making a solution containing 106-118 grams per litre of caustic soda:

Pounds lime used per 100 lbs. soda ash	Causticity of solution.
50	87.2
60	90.8
70	93.4
85	95.8

As already explained it is never possible to carry the reaction to completion, hence when producing a solution of the desired strength for cooking it is impossible in a single boil to get a good causticity and at the same time utilize a high percentage of the lime. The best means of overcoming this difficulty is to use an excess of lime in the first boil in order to get a high causticity; then add an excess of soda ash to the sludge in order to completely utilize the lime in the second boil. The weak liquor from the second boil can be used in making up a first boil. Working in this way cooking liquor of high causticity can be produced and at the same time nearly 100% of the lime utilized.

The economy of the cooking and recovery processes are considerably affected by the results obtained in the causticizing plant since the sodium carbonate plays no active part in the cooking and is carried through the cycle as so much inert material. It not only means that the evaporators and black ash burners must handle so much more material, but it is subject to a loss of from 10 to 20 per cent in each cycle of the process. The importance of obtaining as high a causticity as possible was demonstrated in one plant making about 70 tons of pulp per day where considerations of the cost of labor, repairs, steam consumption, etc., showed that for each per cent increase in causticity there was an annual saving of about \$500.

After the completion of the boiling the next step is to settle the sludge and decant the clear liquor. There is a great difference in limes in respect to settling properties; some settle rapidly and give a large volume of clear liquor, while others settle poorly and give no end of trouble by causing delays, producing small volumes of liquor, and increasing losses of soda. A poor lime may reduce the liquor obtainable by fifteen to twenty per cent because of slow settling.

Among the causes of poor settling are air slaking and a high magnesia content; the former being particularly troublesome in hot, damp weather. With a fair grade of lime the clear liquor obtained should be about half the total volume when preparing a 15° Be liquor in the first boil and a little more than half of the volume of the second, third and fourth boils.

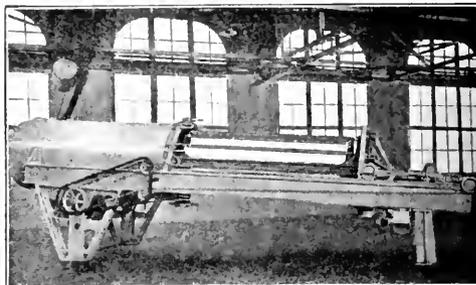


Fig. 1.—The Kelly Filter Press.

Difficulties in settling the sludge may be eliminated by using some form of mechanical filter, of which there are two general types, the intermittent and the continuous. Taking the Kelly press, shown in Fig. 1 as illustrating the intermittent type, it may be briefly described as consisting of a cylindrical press shell which contains a number of filter leaves consisting of built up frames covered with four mesh wire screen and entirely enclosed within bags made of cotton duck. When in operation the filters are enclosed within the shell and when ready to be discharged they are withdrawn. A cycle of operations with the approximate time consumed when using a press with a shell 5 ft. in diameter by 14 ft. long is as follows:

	Minutes.
Filling the press tank	3
Building cake	5—8
Displacing excess by air	3
Filling with hot water	3
Washing	15—20
Discharging excess	3
Dumping and making ready to repeat	10

Total time per cycle 42—50

It is claimed that the washing of the sludge can be accomplished with a volume of water equivalent to twice the weight of the wet sludge when pressed to 50% dry and that only a very small volume of weak liquor is obtained as the separating line between strong and weak liquor is very sharp.

The continuous type of filter is represented by the Oliver rotary filter shown in Fig. 2 and in section in Fig. 3. A filter of this type consists essentially of an open container in which revolves a drum whose periphery is composed of a number of shallow compartments covered by a filtering medium. Each compartment is connected by pipes to a perforated trunion, which turns against a valve cap to which are attached suction and pressure pipes. During a portion of each revolution the suction draws the clear liquor through the filter medium and causes the sludge to deposit upon its surface; while under suction it next passes a section where it is sprayed with water to wash the cake of sludge and on the last part of the revolution pressure is applied which lifts the

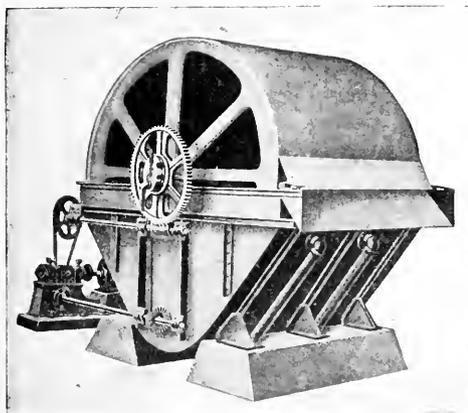


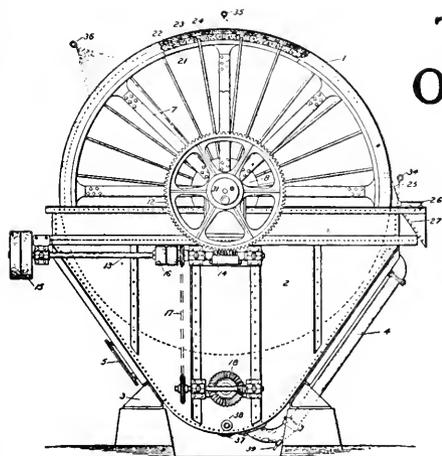
Fig. 2.—Standard Oliver Filter.

cake from the surface of the filter and allows it to be removed by a doctor. The cake is discharged with 35 to 40% of moisture. The filtering medium on this press is a woven wire cloth which has been heavily rolled to partially close its pores and thus give a clear filtrate.

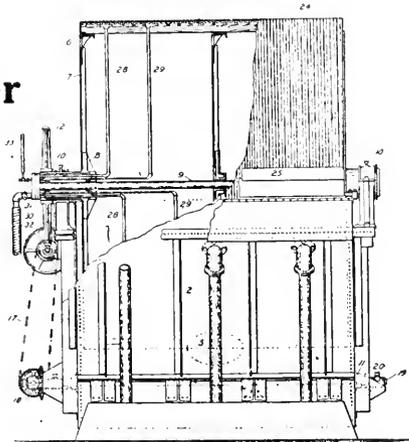
Filters of one of these types are now being used in many chemical works and pulp mills, and aside from the saving by more complete washing they appear to possess great possibilities in the way of producing greater volumes of strong liquor and of permitting the causticizing of weaker solutions with consequent increased efficiency. Observations and a simple calculation based on the builders' claims show that from a given boil it is possible to obtain 66% more clear liquor with a press than by settling. Moreover the floor space occupied by the filters is very much less than for tanks to produce the same volumes by settling.

Another innovation in causticizing processes is the Dorr system which utilizes the principles of continuous agitation in preparing the caustic solution and of continuous counter current decantation in washing the sludge. The general plan of a plant using this process is shown in Fig. 4, and a sectional elevation of one of the thickeners in Fig. 5. The milk of lime and soda ash solution pass continuously through the three reaction agitators, which are fitted with steam coils, and thence to the first thickener. The clear liquor overflowing from this goes to the strong liquor storage tank for use in cooking while the sludge is pumped to the second thickener where it is mixed with the overflow from the third thickener. The overflow from the second thickener passes to the reaction agitators while the sludge goes to the third thickener, and from there to waste or to the recovery plant if one is provided. A plant for the production of 50 tons of caustic soda per day by this method has already been established and is giving very satisfactory results. The liquors produced are from 10 to 13° Be, with a causticity of 93%, and the washing efficiency is claimed to be 99.7%. The power required to operate the whole of this plant is about 26 H.P., and two men are employed on each shift, practically their entire time being given to the making of the milk of lime.

Unless the lime mud formed during the causticizing operation is to be recovered it is desirable that it be freed as much as possible from alkali. It is never commercially possible to wash entirely free from soda since, under the conditions of causticizing, there is formed a small amount of Pirssonite, a double compound of sodium and calcium carbonate, $\text{Na}_2\text{Ca}(\text{CO}_3)_2$, which is completely decomposed into its constituents only on long boiling with water. The course of the washing by the usual process of boiling up and settling is shown by the analyses of muds from a series of boils. The samples were freed from the liquor as much as possible by sucting, but were not washed in order that no soluble salts should be removed. They represent averages of two weeks' actual operations.



The Oliver



List of Parts

- | | | | |
|---------------------------|------------------------------|------------------------------|------------------|
| 1 Filter Drum | 8 Hollow Cast Iron Trunnions | 17 Chain for Agitator Drive | 23 Filter Medium |
| 2 Filter Tank | 9 Steel Drum Shaft | 18 Bevel Gear Agitator Drive | 24 Wire Winding |
| 4 Air Lift Circulators | 10 Main Bearings | 19 Agitator Shaft | 25 Steel Scraper |
| 7 Channel Steel Drum Arms | 12 Worm Drive Gear | 21 Wood Staves for Drum | 26 Vacuum Pipes |
| | | | 29 Air Pipes |

Fig. 3.—Sectional Views of the Oliver Filter.

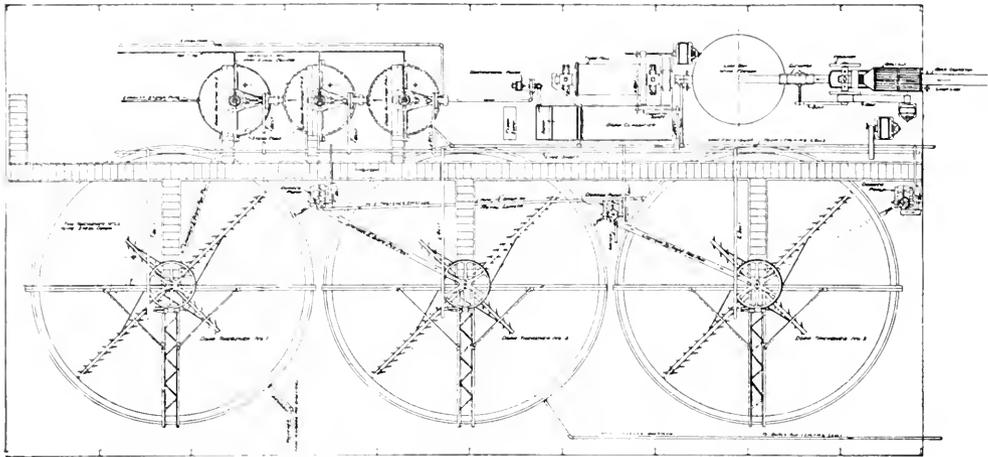


Fig. 4.—Plan of Continuous Causticizing Plant.

Courtesy of the Dorr Company.

All figures are based on the bone dry mud, and are given as percentages.

No.	Boil soda	Caustic carbonate	Sodium hydroxide	Calcium carbonate	Calcium p.e. of lime utilized.
1	8.56	1.80	11.95	75.55	82.4
2	6.77	1.27	5.30	85.20	92.2
3	3.20	0.37	3.37	92.10	95.3
4	1.36	0.16	3.37	94.60	95.4
5	0.52	0.05	3.55	95.00	95.2

This final loss in the fifth boil, which is equivalent to .74% of total alkali as sodium carbonate is seldom equalled in working by the settling method since a much larger volume of weak liquor accompanies the sludge than in the case of the samples whose analyses are given above. Under average operating conditions in a plant of this type the lime mud going to waste will contain from 0.84 to 2.53 per cent of soda, calculated as carbonate and based on the bone dry mud. This is equivalent to approximately 1.0 to 3.0% of the total soda originally added with the lime. Washing in filter presses or continuous filters is claimed to be more complete than by the settling process; with the Kelly press the wet mud when discharged is said to contain 5 lbs. of caustic soda per ton. As the mud after pressing contains about 50 per cent of moisture the alkali present is equivalent to 0.66 per cent of sodium carbonate based on the bone dry mud.

(To be continued.)

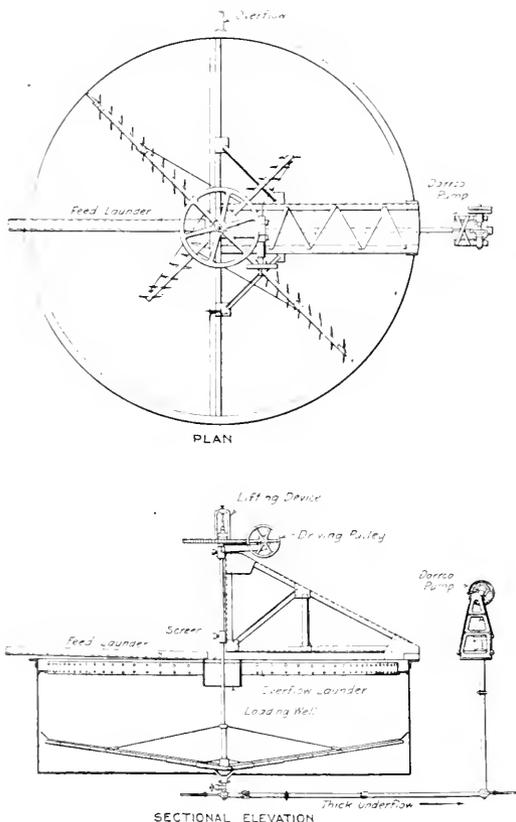


Fig. 5.—Dorr Thickenener, showing underflow controlled by Dorreo diaphragm Pump. Courtesy of the Dorr Company.

REVENUE FROM THE FOREST.

It might be information to know that in New Brunswick, the ordinary Crown dues on timber is \$7.50 per thousand feet, Board Measure, on white and red pine; \$6.00 on spruce, tamarac, jackpine, birch and poplar; ten cents per tie and from 1 1/2 to 2 cents per lineal foot of piling, but as the most of our timber in recent years has been sold by tender, red and white pine has brought as high as \$18 per thousand, spruce and jackpine \$16, ties 18 cents each, piling 3 cents per lineal foot and pulpwood \$1.15 per cord.

QUEBEC AS A PULP AND PAPER PRODUCER.

J. C. Ross, who ably substituted for the editor of the Pulp and Paper Magazine last summer, has contributed the following interesting article to the University Magazine:

At a time when the country is weighed down with a huge war debt, an adverse balance of trade, an unfavourable exchange rate and face to face with the necessity of adopting a vigorous readjustment policy, it is of the utmost importance that every possible encouragement be given to industries which are in any way capable of solving our economic problems. Such a one is the pulp and paper industry. While no persons will claim that it is a panacea for all our economic ills it undoubtedly possesses many factors making for their solution. We are told by economists that the surest and quickest way of wiping out our adverse balance of trade is by exporting. The value of pulp and paper exported from Canada exceeds that of any other of our manufactured goods with the exception of munitions, and munition-making is now a thing of the past.

Away back some twenty odd years ago a lone Argonaut launched out on the unknown and uncharted sea of export business. It is not recorded who the individual was, where he sent the paper, what difficulties he overcame in finding markets, surmounting tariff walls, or financing the project. Although he only exported \$122 worth of paper he was the pioneer in a movement which has grown to immense proportions. From the pitifully small \$122 worth which he exported twenty-seven years ago our exports of pulp and paper now exceed \$96,000,000 and the end is not yet.

The success which has been attained by the pulp and paper industry is not a matter of chance or haphazard effort. For the success of the industry three essentials are required, namely, abundant water power, large available forest resources and a plentiful supply of labour. The province of Quebec possesses these to a remarkable degree. Out of the Dominion's total water power, amounting to 18,000,000 H.P., Quebec has 6,000,000 or one third, but only a seventh of this power has been tapped by engineers. In addition to that, the rivers and streams of the province nearly all flow to the south which carries the products of forest and factory towards the great markets of the United States. In regard to forest wealth, over one half of the total pulp resources of Eastern Canada, or 300,000,000 cords, are located in this province, while in the matter of labour the French lumberjack is without an equal in the world. Altogether its water power, raw material, labour, shipping facilities, and nearness to a great market, combine to make this province one of the world's great pulp and paper manufacturing centres.

The remarkable growth and expansion of the pulp and paper industry in this province is directly traceable to the far-sighted policy put into force some years ago by the Gouin Government. Legislation was passed a decade ago prohibiting the export of pulp wood cut from Crown Lands, and as a result of this policy American paper manufacturers who formerly depended on this province for their supply of raw material, were forced to move their plants to Quebec and manufacture the pulp wood into paper on this side of the border. At the same time the Government adopted most progressive measures in regard to conserving the water power of the province and safe-guarding the forests by instituting thorough fire-protective measures. At the cost of many millions of dollars great conserva-

tion dams were built on the Upper Ottawa, in the St. Maurice Valley, and in other parts of the province, with the result that the paper manufacturer is now assured of a steady supply of water throughout the year instead of having floods in the spring and droughts in the summer and fall. Stringent laws have been passed for the protection of the forests, in which work the co-operation of the limit owners and paper manufacturers was enlisted. In the addition to the above every possible assistance and encouragement is given to those who desire to go in for re-forestation and the scientific cutting of their timber resources, while the Forest Products Laboratories at McGill continue to do a most useful work of an experimental nature.

To-day, as a result of wise legislation and favourable natural resources, Quebec province has over forty pulp and paper mills located within her borders, or almost half of all those operating throughout the Dominion. While the growth of the industry has been most rapid in the last few years it is by no means of a mushroom nature. It has developed throughout the years until to-day it is almost our most important manufacturing industry. For the year just closed, this country exported \$96,000,000 worth of pulp and paper products, which is a far cry from the paltry \$122 exported a little over a quarter of a century ago. In 1917, we exported \$71,000,000 worth; in 1916, \$52,000,000; in 1915, \$3,600,000; and in 1910, \$13,000,000. In that year our exports of newsprint alone to the United States amounted to but \$1,000,000 or 15 per cent. of their production. Last year our export of newsprint was \$35,000,000, or 76 per cent. of the American production. To-day Canada is producing 625,000 tons of newsprint per annum, or half the amount produced by our big neighbour to the south; but in addition to that we are producing large quantities of high grade book papers, writing papers, wrapping papers, and other products.

The United States is becoming more dependent on Canada for her pulp and paper. Quebec has the largest available supply of pulp wood on the continent, the greatest power resources, and as the nearest province to the large consuming centres of the Eastern States it must continue as the great source of supply. The provincial authorities and the heads of the great paper mills in the province are fully alive to the situation, and are prepared to "carry on" to a still greater extent. It is not only to the United States that our paper men are looking for markets; they find that there is a great demand for our paper products in South America, South Africa, Australia, and other parts of the world. In order to take care of the export business, the paper manufacturers have formed an Export Association which has for its object the closest possible relations between the manufacturers, thereby securing a standardized product and also greater efficiency in marketing and selling the output.

The pulp and paper industry of the Dominion is one of our great basic industries and is not dependent upon artificial aids for its maintenance. Just as long as the forests of the country are available for cutting over, as long as the streams furnish power and means of communication, and the industry retains its present technical heads, it will maintain its prominence. Within the last few years it has got upon a stable basis largely through the employment of technically trained men in its mills, through the adoption of conservation policies in regard to the care and cutting of its forests, as well as by the use of reforestation, the standardiza-

tion of its products, and the adoption of progressive measures of manufacturing and marketing, until today it is not only our most important exporting industry, but is destined to be the most important of all our manufacturing industries. The development of the pulp and paper industry in this province is only in its infancy.

RETURNED MEN MAKING GOOD.

Interviews with paper manufacturers and heads of large paper using houses of Ottawa as to whether or not returned men are making good, shows that the boys from "over there" have got their grip, and in the majority of cases are making excellent workmen.

"Better than ever if that is possible" said Mr. John Black of John R. Booth. Mr. George H. Burland of the British American Bank Note Company believes that the experience gained by the veterans was a gain to them, and that the course of war had helped rather than injured them. The E. B. Eddy expresses its appreciation for the worth of the returned man.

Returned men have been re-employed by the Eddy Company. This company of course keeps ready for them the positions of former employees who want their old jobs when they return.

TO PUBLISH PULP AND PAPER STATISTICS.

By the report of the Dominion Bureau of Statistics, made public at Ottawa on last week it is shown by the Government's own figures that the Pulp and Paper industry ranks second in the list of total capital investments with a capitalization for the year 1917 of \$186,787,405.

The investments of newspaper and publishing plants, or the capitalization required to successfully operate them is not even included in the first ten leading industries in the summary of invested capital, and neither is it referred to in the list of twenty of the leading industries of the country.

By the published reports in the press under the general heading "Pulp and Paper Industry" it is almost impossible to strike any average on a daily tonnage basis for the capitalization of a newsprint mill. Paper, pulp, and newsprint are seemingly classified together with a total invested capital.

On special authentic figures given to the correspondent of the Pulp and Paper Magazine by an official of the Dominion Bureau of Statistics this week, the investment in the newsprint mills was in 1917, \$150,828,649. This worked out on a basis of 2,400 odd tons per day for 300 working days per year gives a production of 7,275,000 tons, which on a divisor of 7,000 tons annually, gives a required capital investment on a daily tonnage basis of only \$21,546 odd per ton.

The writer is further informed and his sources of information are good, that a special report covering the pulp and paper industry will be issued, as soon as possible. The contents of this report or so-called "bulletin" is at present in the hands of the workers of the Printing Bureau, and it is further understood that the "copy" has been there for some time. Proof sheets may be drawn during the present week.

Among some of the statistical figures which the writer understands will be shown when the report is

issued the year 1917, will be the statement of the total employment of 15,081 persons in the pulp and paper industry. Of this number 659 are females. Their wages amounted to \$13,263,833, salaried officials number 1,008, 185 being females, with an additional salary of \$1,940,915.

Included in the cost of materials used including sulphite will probably be an item of \$27,156,629, fuel, \$5,296,965, and miscellaneous expenses, \$8,325,059. The value of newsprint products in 1917, it is forecasted, the report will show were worth \$38,868,084. All other grades of paper including board, book and writing, and wrapping papers, totals \$32,975,561.

AUSTRALIAN PAPER MILLS AND TRADE.

At the annual convention of the New South Wales Country Press Association, which has just been held, it was stated that the new paper mills in Queensland (which have just started operations on a small scale) has produced a high grade paper pulp from blady and other grasses. It is stated that the company will be able to turn out about 20 tons of paper pulp per week. A five-ton parcel of the pulp has just been turned into prime cardboard at a Sydney paper mill, and it is stated showed a satisfactory return.

It was also announced at the convention that it was the intention of the New South Wales Government to build paper mills near Yarragobilly, about 200 miles from Sydney, where there is a constant supply of water, and that the mills would be capable of turning out about 30,000 tons of newsprint annually. The estimated cost of the works is £250,000. Recently the Government sent local woods abroad for the purpose of manufacturing about 50 tons woodpulp, the paper from which will be tested on the machines of the Sydney daily newspapers.

In addition to the supplies of newsprint received from British Columbia and other North American sources some heavy shipments are arriving at Australian ports from Scandinavia. Some of this paper is in execution of orders placed a long time ago and when costs were considerably less, hence importers anticipate more than average profits on its realization in a comparatively bare market.

Some recently arrived shipments from Nova Scotia and Newfoundland, to an extent relieved trade anxieties, and an Australian steamer is announced to load newsprint at either Vancouver or Powell River in January for Commonwealth ports.—Trade and Commerce Bull. No. 785.

BEAVER COVE LUMBER & PULP CO.

The Beaver Cove Lumber & Pulp Company, with offices at 806 London Building, Vancouver, B.C., and plant at Beaver Cove, B.C., is making progress with construction. The equipment will consist of a 134-inch two-cylinder machine, trimming 122 inches, one dry machine and one digester. The plant will have an initial capacity of 80,000 pounds of sulphate per 24 hours.

The officers of the company are W. H. White, president; W. O. King, first vice-president; Thomas White, second vice-president; George C. Pratt, secretary; W. O. King, treasurer, and C. F. Beyere, engineer.

Knives for Paper Cutting Machines

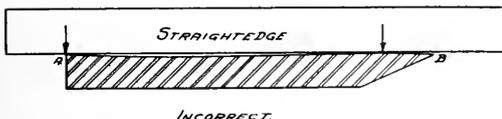
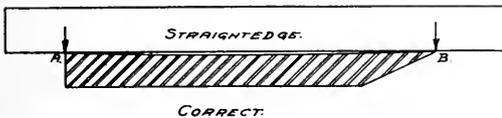
By NIEL GRAY, JR., Proprietor Oswego Machine Works.

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No matter how carefully a paper cutting machine is built it cannot cut right if the knife is imperfect. The knife is most important. It must be kept sharp. It must be of the proper shape and thickness and bevel and temper, and free from any burrs or lumps on its back edge. A cutting-machine knife is like a razor that, stropped correctly, does not pull the beard, but stropped an infinitesimally different way—a difference impossible to see except with a microscope—pulls hard. Study carefully the knife. Most knives are imperfect in spite of the rigorous specifications given them by makers. They vary in thickness, straightness, concave, bevel, flatness, temper, and quality of steel; and also in the character of their sharpening and honing, which varies with the fineness or coarseness of the grinding wheel and stone. These variations need only be a few thousandths of an inch to cause trouble.

A blue wave mark indicates where the temper is drawn, and a file which "drags" when pushed fairly hard across the flat of the bevel indicates the soft spots, where the temper is imperfect.

To ascertain if a knife has a correct face, hold it flat, face up, with one end on a window ledge, and look along the face for variations. This is a simple matter which any one can do. Use a perfectly straight



and clean-edged steel rule and pass it along from one end to the other as shown in accompanying figures. A dark spot shows the point of contact of the rule with the knife. These dark spots should show only exactly at the cutting edge, and at the back edge. If a dark spot shows away from the cutting edge, it indicates that the knife is imperfect there, and will not make a true cut. Regrinding the face by the makers can correct this fault, except where it is the fault of the one who hones the knife after it is sharpened.

Hone the knife only on the bevel. To remove the wire edge burrs along the edge lay the hone flat on the face and rub gently so as not to round over the edge.

A knife will sometimes cut better after it has been ground the first time. A polished knife will give a better surface to the cut. The cutting of the same kind of stock will often vary with different makes of knives. An oily rag tied to a stick kept handy and passed along the bevel of the knife before cutting hard

stock will improve the cut. A blunt bevel is preferred for hard stock; a long, thin bevel for soft stock.

A general rule for the length of bevel on knives is two and one-half times the thickness of the knife. This may be varied to suit the different materials to be cut, but must be held within reasonable limits to preserve the strength of the cutting edge of the knife, and also to secure accurate, clean cutting.

The face of a knife should be as nearly flat as possible, and must not be convex. It is better to have it concave than convex, but not over two or three thousandths of an inch concave. A knife that is too concave or convex will tend to dig in or out of the work.

For safe clearance the knife should be a few thousandths of an inch thinner at the top than the distance from its back to the line of its cutting edge.

The knife bolts should always be screwed up snug, so that the cutting edge of the knife will have the correct pitch in relation to the pile. The top or back edge of a knife should be held absolutely straight to get a firm thrust-bearing all along the knife-bar. Knives abutting against adjusting screws for this reason are not apt to give so good results as knives that abut against a solid shoulder all across the knife-bar.

Dirt, oil, grease, paper, chips, etc., in the knife-slot or bar, or a bruise or nick on the back edge of the knife, or a defective knife bolt, may prevent the knife seating firm and true in its proper place, and may cause poor cutting.

Knives bought from the maker of paper-cutting machines are apt to give the best results because they receive two inspections; one by the knife maker, and another by the machine maker, who is careful to see that only perfect knives are supplied.

In order to understand how important it is to use a sharp knife on a power cutter, throw off the belt and pull the machine around by hand through a high cut with a dull knife. Then put in a sharp knife and make the same cut. Where there is much cutting to be done and the machine is in constant use, it is well to keep extra knives on hand to allow one to be sharpened while the other is being used.

A specially tempered knife is best for boards or varnished paper. Gummed and varnished stock are likely to break small pieces off the knife edge. The new double-shear, end-pull motion for the knife now furnished on the latest automatic rapid production cutting machines practically eliminates this trouble.

The first place to look when work is not cut true, after making sure there is correct clamping pressure, is the knife. See if it is sharp. See if it has been honed properly. See if it has the proper length of bevel.

Grinding Paper-Cutter Knives.

It is best to grind with a soft sandstone; but if an emery wheel is used, it should be about 46-60 grain, 5½ grade, or soft enough so that a light feed can be taken without burning or glazing the bevel of the knife.

The operator of the grinding machine should be in constant attendance while the knife is being ground, and should have a liberal supply of water feeding on the wheel where it comes in contact with the bevel of the knife, not at the top of the wheel. If this supply of water is cut off and the wheel continues to grind without water, this will create friction, heat up, and draw the temper in the knife or crack it.

Extra precaution should be taken to grind the cutting edge of the knife parallel with the back of the

knife, and not have one end of the knife wider than the other. When this occurs the cutting edge of the knife does not hit the cutting stick squarely, and not only has a tendency to snip out at the wide end, but also to destroy the cutting stick quickly.

The bevel should be ground flat or a shade concave out of the knife and causing the machine to cut knife, plus one-quarter inch, or twenty-four degrees. If this rule is not adhered to and a longer bevel than this is ground on the knife, the flat side or face of the knife will become rounded about one-half inch back from the cutting edge, thereby taking the slight concave out of the knife and causing the machine to cut tapering, i.e., the top of the cut, say four or five inches high, will be narrower than the bottom of the cut.

If a knife is ground on the rim of an ordinary emery wheel worn to a small diameter, the smallness of the emery wheel will tend to make the bevel concave. This weakens the edge of the knife. A knife grinder with a cup-shape emery wheel makes it easier to grind the bevel straight.

Honing Paper-Cutter Knives.

Every knife, when coming direct from the grinding machine, has a wire edge which should be honed off before the knife is adjusted to the knife-bar. Excellent results in honing are obtained from No. 1 Washita oil stone (Pike Mfg. Co., N.H., U.S.A.), or an India oil stone made by W. H. Price, Hartford, Conn.

The knife should be laid on a bench or table, flat side down, with the edge of the knife protruding about one-eighth of an inch beyond the edge of the table. The hone should be held flat on the bevel, and the motion should be a circular or rotary movement as well as up and down, and the honing should be done from

one end to the other without lifting the hone from the knife.

When a fine wire edge appears on the flat side, lay the hone on lightly with no pressure and absolutely flat, and draw from one end to the other. After honing the knife for a short time (four or five minutes) the wire edge will disappear or get so thin that a small piece of white pine or other soft wood, if drawn along the cutting edge, will eliminate this thin wire edge. Never hone the flat side of the knife. Never hone a knife while in the machine.

A wooden holder for the oil stone will protect the fingers.

For smooth "glass edge" cutting, the bevel of the knife may be ground slightly concave. Then hone thoroughly with an extra fine hone slightly convex in shape.

No method of grinding has yet been devised which will leave a perfectly smooth surface, because no matter how fine the stone or material that is used for grinding it will leave marks on the edge of the knife, and these marks cause roughness in the cut. The reason the above method gives almost a perfectly smooth cut is because a thorough honing removes most of the marks.

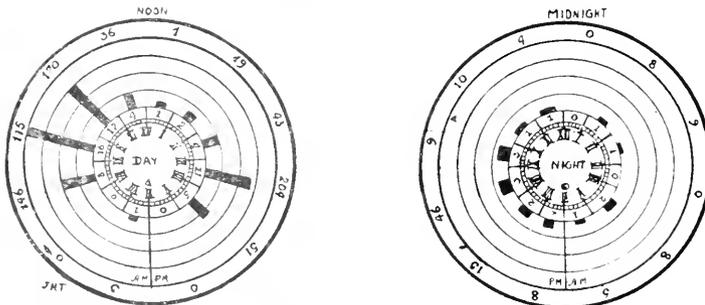
BROMPTON CO. OUTPUT.

The output of the Brompton Pulp and Paper Co. for the three months ended January 31st, 1919, is as follows:

Newsprint, tons	3,791
Kraft paper, tons	1,652
Cardboard, tons	1,408
Sulphate, tons	6,479
Groundwood, tons	11,626
Sawmill, feet	483,048

ACCIDENTS AT THE LAURENTIDE

YEAR ENDING 31st DECEMBER 1918
ACCIDENTS BY HOUR OF OCCURRENCE



NOTE: OUTER CIRCLE REPRESENTS NUMBER OF WORKING DAYS LOST. THICK BLACK LINES ACCIDENTS.

YEAR ENDING 31st DECEMBER 1918
ACCIDENTS BY AGE



(From Le Digesteur.)

This diagram shows the relation of time of day and night and the age of workers to the number and seriousness of accidents. The line at the left for 115 hours lost seems out of proportion. Note the large number of accidents to workers under 20 years of age, but there may be a large number of young employees. Also there are probably many more employees at work in the day time, and these would include the less careful class.

Technical Section

Of the Canadian Pulp and Paper Association

ANNUAL MEETING.

The following reports of committees are a continuation of the account of this annual business meeting of the Section begun in the last issue of this Magazine.

REPORT OF COMMITTEE ON SAMPLES.

By A. L. DAWE, Chairman.

Your Committee takes courage from the ending of hostilities to hope that it will be possible to collect a complete set of European and American grades of paper that will be available for the members of the Association.

From such samples of English papers that have reached Canada in the past four years it is obvious that quality has given place to utility. Whereas the paper makers of Canada have seized the opportunity to broaden their range to include many lines hitherto imported from Europe and the United States, such as Bristol Boards, Cover Papers, Glassine Papers and Onion skins.

REPORT OF THE COMMITTEE ON STATISTICS.

By S. L. BURNS, Chairman.

Your Committee has endeavoured to follow the suggestions offered by the Council at the conclusion of the last annual as to the construction of charts and the compiling of Statistics bearing on the Pulp & Paper Industry.

Examples of charts are displayed in this room and will later be incorporated in a Book of Statistics covering the imports and exports of Pulp & Paper as far back as available from Government sources. In this connection it gives the Committee on Statistics great pleasure to acknowledge the co-operation and courtesy received from the various Government Departments, including the Bureau of Statistics who have themselves compiled a very useful brochure of the Pulp & Paper Industry.

The complete volume of Statistics referred to above is practically ready for the printers and will be distributed to the members as soon as possible after the meeting.

The Committee on Statistics draws attention to the wide publicity obtained by the industry in the past 12 months in which statistics have played a very important part.

In the opinion of the Committee it is the duty of every member of the Pulp & Paper Industry to keep himself posted on its vital statistics and to use all possible means of acquainting the general public with the importance of this industry to Canada.

It is considered advisable to publish all the charts at one time, when complete.—Ed.

REPORT OF THE COMMITTEE ON STANDARDS.

Mr. R. W. Hovey made a statement for the Committee on Standards to the effect that its work was accomplished in the examination and recommendation of standard methods for the analysis of certain materials. The more important of these were published in the

Pulp & Paper Magazine, Jan. 23, and may be obtained as reprints.

The Chairman added: You will remember that in our list of resolutions we included a statement about the adoption of standard methods. The Committee propose that after the submission of new methods a period of six months elapse before we can consider such methods, so you have now to suggest methods for trial later on, and take action later.

REPORT ON THE COMMITTEE ON ABSTRACTS AND PUBLICATION.

By J. N. STEPHENSON, Chairman.

The committee on abstracts and publication desire to report that during the past year some sixty journals are represented among the abstracts that have appeared almost every week in the Pulp and Paper Magazine. The abstracting has been done by five persons working under the direction of the Canadian Committee, and three under the American Committee. The co-operation of the two committees which was indicated at the last annual meeting has continued successfully throughout the year. The expense attending the work of this committee has been \$90.64 for abstracting and copying the reviews that were taken from Chemical Abstracts. Of this amount half was charged to the American Committee and the other half paid by the Pulp & Paper Magazine. The American Committee on their part paid out \$40.30 to their abstracting staff, and of that the Pulp & Paper Magazine, through the Canadian Committee, paid one half. The total cost of abstracting during the year was therefore \$130.94, of which \$65.47 was paid by the Pulp & Paper Magazine, and the same amount by the American Committee. It is expected that no charge for this service will be made to the Technical Section.

The chairman of your committee, with the assistance of Mr. Clyde Leavitt on forestry subjects, and Mr. Wang during the chairman's absence during the summer, has put a classification letter and number on each abstract to assist in filing them. This classification is according to the plan that was submitted at the last annual meeting, and which it was voted to try out for a year. Some few criticisms and suggestions have been made. The committee now desires to know whether this effort on the part of the committee is of sufficient value to be continued, and particularly desires to have frank criticisms and suggestions that will lead to the improvement of the plan if it is to be carried on.

In regard to publication the committee takes great pleasure and satisfaction in submitting copies of the Proceedings of the Section for your consideration. This volume contains the history of the Section with a brief review of the papers presented since its formation. This review is taken from the annual reports of the chairman of the Section to the main Association. This part will probably not be repeated in subsequent issues, except for the year immediately passed, but is included here in

order that there may be a complete record of what the Section has done.

Another section gives the by-laws, amendments and discussions as they stand. The last and perhaps the most interesting part of the book is the biographical list of members. This has been brought as nearly up to date as possible, and the committee earnestly desires that the chairman be advised promptly of any errors or changes that should be made, and that subsequent changes of addresses or position should be made known so that this information may be kept complete and up-to-date.

It was confidently expected by the committee that this volume would have been distributed early last summer, and that at this time there would have been distributed a second volume containing the addresses delivered at the various meetings of the Section during the past year. Unfortunately happenings in connection with the removal of the publishers of the Pulp & Paper Magazine to the new quarters have upset the plans of the committee, and it will be some time yet before such a volume can be prepared, if the Section still wishes to incur the expense of its preparation. A part of this volume, and to some members perhaps the most important part was to have been a reprinting of all the abstracts for the year, collected according to the classification scheme that has already been mentioned. If desired this section could be printed separately if it is decided to print it at all.

The actual expense of the printed proceedings which you have in hand was \$100.00, the estimated expense for the book of transactions including the papers presented is about 100.00, and the estimated expense of reprinting the abstracts that have appeared during the past year is about \$100.

One member of the committee, Mr. Wang, is at present in Europe, so this report is respectfully submitted by the remaining members.

REVIEW OF RECENT LITERATURE.

A-3. Rape straw as a paper and fodder material. Anon. J. Soc. Chem. Ind. 37, No. 19 (1918).—The examination of the rape plant showed, on the dry substance, Cellulose 30.31 per cent, Pentosans 24.10 per cent, Lignin 40.06 per cent, and Ash 5.53 per cent. The composition of the plant substance is somewhat similar to that of cereal straw, which suggests that rape, like straw, might be used as a raw material, both for paper pulp and for fodder. A pulp prepared by the soda process had the composition: Cellulose 55.50 per cent, Pentosans 30.50 per cent, Lignin 10.10 per cent, and Ash 3.77 per cent. In consequence of the higher proportion of lignin in the rape straw as compared with cereal straw, a sharper treatment is necessary in order to obtain a similar degree of resolution. The pulp would be described as suitable for the manufacture of straw board.—D. E. S.

A-3. Rice straw for paper making. Anon. Paper Maker & Brit. P. T. J. 56, No. 3, (1918).—Investigations conducted on a sample of rice straw from Egypt give very promising results. The sample was first examined with the following results: moisture 11.8 per cent, ash 17.6 per cent, cellulose 50.00 per cent, expressed on the dry straw. Length of ultimate fibers 0.6 to 3.0 m.m., mostly 0.9 to 1.3 m.m. The straw was submitted to treatment with varying amounts of Caustic Soda under conditions similar to those em-

ployed for the manufacture of pulp. The following is one of the many experiments conducted: Ten per cent Caustic on weight of straw using a 2.5 per cent solution. Cooked for four hours at 140 degrees C with a yield of 50 per cent pulp on the straw used. Experiments were also conducted on the rice husks, but were unsuccessful as the pulp obtained is very short fibered and makes a very brittle paper.—D.E.S.

A-4. The determination of the bleaching qualities of sulphite pulp. Anon. Paper Maker & Brit. P. T. J. 56, No. 5 (1918). A very unique method of determining the bleaching qualities of Sulphite Pulp, the main features are as follows. A fiber slide is made up in the usual manner with the exception that a solution of malachite green is used in place of the usual fibre stain. It is very easy by means of the microscope and a color scale consisting of green stripes one cm. wide on a white cardboard to determine the strength of the color in proportion to the scale. The lighter the color is, the easier bleaching the fiber and vice versa. It is necessary to make up a standard series of classifications expressed in figures one to five for easy bleaching, and eight to twelve for strong pulp. The value of the scale or classification of Grade 1 must of course be established in accordance with the best quality produced by the mill.—D. E. S.

E-1. Analysis of sulphite acid. Pulp and Paper M., 16, No. 46, p. 1015, No. 47, p. 1037 (1918).—A translation of a paper by Prof. Peter Klason is given in which the analysis of sulphite liquor before, during, and after cooking is treated. It is shown that the use of one iodine and one alkali titration are not enough for the determination of free and combined SO_2 , as the loosely combined SO_2 is not taken into account. Instead, one iodine titration, one alkali titration, and then a second iodine titration made on a sample first made alkaline and then acidified is recommended. The first iodine titration indicates the sum of the free SO_2 , and that present as bisulphite. The alkali titration indicates the sum of one half the SO_2 present as bisulphite, one half of the loosely combined SO_2 , and the free SO_2 . The second iodine titration indicates the sum of the free SO_2 , the SO_2 present as bisulphite, and the loosely combined SO_2 .—R.C.

E-2. Method of treating sulphite cellulose waste lye. Anon. J. Soc. Chem. Ind. 37, No. 16 (1918).—An English patent granted to E. Oman, Stockholm, Sweden, Patent No. 106,493. Sulphate waste lye at a concentration of 10 per cent dry substance contains about 2.5 per cent of sugars, 2.5 per cent of Calcium Ligninsulphonates, and 5 per cent of Calcium Lignonesulphonates. The Ligninsulphonates are precipitated by saturating the waste lye, without any preliminary treatment, with Sodium Chloride and heating to 50-70 degree C., and the lignonesulphonates remain dissolved in the saturated liquid, even after concentration.—D. E. S.

E-5; F-5. Manufacture of paper pulp. Anon. J. Soc. Chem. Ind. 37, No. 19, (1918).—A U. S. Patent granted to S. W. Wells of Madison, Wisconsin, as follows: In the process of digesting wood or other fibrous material, the desired amount of moisture is introduced into the digester during the process, in direct combination with the steam whereby the cellulose is protected to a marked degree from the action of the digestion liquors, while their action on the incrusting matters is not diminished.—D. E. S.

K-6. Method of treating vegetable fibre. Anon. J. Soc. Chem. Ind. 37, No. 19 (1918).—A U. S. patent No. 1,269,476 granted to M. W. Marsden, of Philadelphia, Pennsylvania, for the manufacture of pulp, the incrusting and other difficulty soluble bodies are removed by subjecting the prepared stock to the solvent action of a mixture of sodium chloride and lime in the presence of heat, moisture and pressure.—D. E. S.

K-8. Improvements in apparatus for coloring paper. Anon. Paper Maker & British P. T. J. 56, No. 4 (1918).—An English patent granted to John Galloway and Alex Stratton, No. 117,428. This invention relates to apparatus for use in coloring paper, and has for its object to provide improved means adapted for use in conjunction with a paper machine or calender rolls for supplying liquid dye to one side of the paper. In carrying out the present invention, the dye is applied to the paper by means of a spray pipe or the equivalent, and the surplus dye liquid is collected into a "doctor" or distributing box.—D. E. S.

K-12. Functions of a smoothing press. Pulp and Paper, 16, No. 51, p. 1099 (1918).—The function of a smoothing press is to eliminate felt and wire marks, this being accomplished by using a soft rubber upper roll having a contact of three-quarters of an inch to an inch in width with the gun metal or bronze lower roll.—R. C.

K-14. The paper cutting machine. Neil Gray, Jr. Pulp and Paper, 16, No. 51, p. 1095 (1918).—A description of various modern types is given.—R. C.

K-23. Safety paper. Anon. J. Soc. Chem. Ind. 37, No. 19 (1918).—A patent granted to E. E. Schmidt, of Boston, in which the paper is coated with a composition containing ingredients capable of being decomposed by acid and alkaline ink eradicators to release substances which stain the paper and render writing ink containing iron indelible. Suitable ingredients are a soluble ferrocyanide, an iodide, glycerin, ox-gall, tapioca flour and caustic soda; the ox-gall is for the purpose of rendering the paper permeable to the composition.—D. E. S.

K-23. A new waterproof fiber paper. James Scott. Paper Maker & Brit. P. T. J. 56, No. 5 (1918).—Part 1 of a series of articles by the author covering waterproofing paper. The opening chapter contains some very useful information regarding present methods of waterproofing.—D. E. S.

K-23. Process for rendering cardboard grease and waterproof. Anon. J. Soc. Chem. Ind. 37, No. 19 (1918).—A German patent No. 306,028, granted to L. Buchbinder, of Vienna. The proofing composition consists of a mixture of a glue precipitate with a decoction of Iceland Moss containing gypsum or magnesia, or with a concentrated solution of resin. The composition is applied warm and dried at ordinary temperatures.—D. E. S.

K-24. About cores. R. S. Kellogg. Pulp and Paper 16, No. 52, p. 2017 (1918).—The development of a satisfactory and cheap paper core seems the best solution.—R. C.

K-0. American decimal system of weights of paper. Pulp and Paper, 16, No. 51, p. 108 (1918).—An outline of the system devised by the Pulp and Paper Division of the War Industries Board at Washington is given. The basis in all cases is the weight in thousandths of a pound of one thousand sheets one inch square.—R. C.

L-4. Brief history of the paper bag. Pulp and Paper, 16, No. 52, p. 2015 (1918).—R. C.

L-5. Acetyl cellulose and process for making same. Anon. J. Soc. Chem. Ind. 37, No. 16 (1918).—A patent granted to W. G. Lindsay, of Newark, New Jersey. U. S. Patent No. 1,256,216. The cellulose is treated in a preliminary bath with alcohol and acetic acid or other diluent, which without itself altering the cellulose induces acetylation in the subsequent process; the treated cellulose is then treated with a mixture of Acetic Anhydride and a diluent, such as Benzene. The product consists of a fibrous acetyl-cellulose, which has its original structure unaltered, and is soluble in Acetylene Tetrachloride.—D. E. S.

L-0. Improvements in the manufacture of paper tubes. Anon. Paper Maker & British P. T. J. 56, No. 4 (1918).—An English patent No. 118,169, granted to Fred Wolfenden. This invention relates to the manufacture of paper tubes or hobbins as they are sometimes called in the textile industries. The novelty of the invention is to coat one side of the paper as it is being wound under tension in the form of a tube by known mechanical processes, with a solution of glue in the proportion of eight (8) ounces of glue to one (1) pint of water, and the outside of the tubes are also coated with a similar solution. The tubes are then subjected to the action of formaldehyde vapor or a 40 per cent solution of formaldehyde for twenty to thirty minutes, and then dried at a temperature of 220° F.—D. E. S.

M-4. The cost in coal of avoidable belt slip. Pulp and Paper, 16, No. 48, p. 1050 (1918).—A chart from the Cling Surface Company from which the cost of main belt slip can be computed is reproduced.—R. C.

M-4. The last word in belt charts. W. F. Schaphorst. Pulp and Paper, 16, No. 51, p. 1097 (1918).—The proper size of belt for a given drive can be determined graphically from the chart given.—R. C.

N-4. How much money does a soot cleaner save? Pulp and Paper, 16, No. 52, p. 2019 (1918).—Figures furnished by the Vulcan Soot Cleaner Co. show a saving of \$15,000 per boiler during the seven years' estimated life of a cleaner.—R. C.

P-0. Employees' co-operation in safety work. George Carruthers. Pulp and Paper, 16, No. 50, p. 1080 (1918).—Items worthy of attention in welfare work are heating, lighting, ventilating, drinking water supply, and accident prevention.—R. C.

R-14. Research for the pulp and paper industry. W. B. Campbell. Pulp and Paper, 16, No. 45, p. 993 (1918).—The most successful method of carrying out research work on pulp and paper problems of interest to a limited number of mills resembles that of the Mellon Institute. An estimate of the cost is made; this is raised among those interested, a competent staff is appointed with the approval of those subscribing, and the work is pushed along lines laid down, making full use of all facilities of the government laboratories.—R. C.

GROUND WOOD AT PONT ETHEMIN, P.Q.

Henry Atkinson has recently established a ground wood mill at Pont Etchemin, P.Q. The equipment consists of three grinders and two wet machines. The plant is making 10 tons of ground wood per day, and is driven by its own water power. The manager is D. C. T. Atkinson.

NEW PORT ARTHUR MILL IN SIGHT.

After hearing and seeing many rumors that something was about to happen in regard to the development of the Pic River and Black Sturgeon Limits, we note the following despatch in a contemporary. It appears to be authentic.

J. J. Carrick has definitely announced that his company is ready to proceed almost immediately with the construction of a pulp and paper mill at the north end of the city.

The estimated cost of the mills is given at \$7,500,000 and the number of men to be employed in the construction is figured at between 1,000 and 1,500.

Contracts will be let and building operations commenced with the arrival of spring weather.

Hardy S. Ferguson, one of America's leading engineers in pulp and paper mills, is at work on the plans. The project has been fully financed.

Mr. Carrick will contract with the Ontario Government for 20,000 horse power of electrical energy. The Utilities Commission will contract for 10,000 thus assuring the immediate development on the Nipigon River of 30,000 horse power.

Hon. G. Howard Ferguson, Minister of Lands, Forests and Mines, for Ontario, wired Mr. Carrick assurance from the Hydro Electric Commission of power being delivered to Port Arthur by the spring of 1920.

To fully appreciate the work that Mr. Carrick has done to engineer the location of a plant here, it is necessary to go back several years to the time when the Ontario Government offered for sale by tender, the Pic and Black Sturgeon limits. Mr. Carrick outbid three others and secured the limits and, under the original agreement was entitled to power development in return for improvements of \$400,000 the first year and \$2,000,000 for the two successive years.

The agreement was later changed on consent of Mr. Carrick, the Government agreeing to supply power at cost. This entitled Mr. Carrick to a suspension of the original agreement. On May 9, 1918, a supplementary agreement was drawn up and as power was not available, the company was not liable to pay or make any improvement until adequate power was supplied to operate the mills.

BARBER-ELLIS ADD SEVERAL NEW DIRECTORS.

The annual meeting of Barber-Ellis, Limited, manufacturing stationers and paper dealers, Toronto, was held last week, and an encouraging report for the past year was presented. J. F. Ellis was re-elected President, F. M. Ellis, Vice-President, and H. Holt, Secretary. The following directors were also elected: C. G. Ellis, Brantford; E. H. Ellis, Toronto; Wallace Murphy, Winnipeg; W. R. Davis, Calgary; Lorne D. Graham, Vancouver and H. Scott, Toronto. The last four have just been added to the Board.

Barber-Ellis have taken over the business of Barber, Ellis, Davis, Limited, Calgary, of which Mr. Davis was in charge, and the establishment in that city will from this out be conducted under the name of Barber-Ellis, Limited. Mr. Davis continues as manager, and has been given a seat on the board of directors as well as the managers of the Winnipeg and Vancouver branches.

The prospects for the coming year are regarded as most promising and the papeterie and fancy station-

ary departments of the firm are very busy while, in the envelope factories at Brantford and Winnipeg, the latter being opened last year, business is very good.

Several employees of the firm of Barber-Ellis, Limited, who have been doing service overseas, are expected home next month, and they will all resume their former positions. Major Garfield Graham, who was joint manager with his brother, Lorne D. Graham, of the Vancouver branch, will continue in the same capacity on his return. Arthur Folger, who for many years covered the territory between Toronto and Ottawa and Northern Ontario for the head office in Toronto, and is a member of the Third Canadian Division, will soon be once more on his old ground, while Major K. A. Murray, formerly attached to the Winnipeg branch, who went overseas with the 144th (Winnipeg) Battalion, will again take up his former duties on the travelling staff in that city.

THE PULPWOOD OUTLOOK IN ONTARIO.

The Monteith Pulp and Timber Co., Limited, of which James Thompson, M.L.A., of Havelock, is President, and E. R. Heyland, of Toronto, secretary-treasurer, who handled about 20,000 cords of pulpwood in Northern Ontario during the past season, will not do so during the present year owing to high rates in transportation, limited demand and the uncertain market for the future. Due to unsettled conditions contracting pulpwood companies are diffident about buying up large stocks, and very few companies are making monetary advances to the settlers as in years past. If a settler goes ahead and gets out a stock of pulpwood he has to finance himself and run the risk of selling it later on. Messrs. Thompson and Heyland, who also operate Toronto Investments, Limited, will devote all their attention to the latter organization and will buy pulpwood from other portions of old Ontario south of North Bay. They expect to handle about nine or ten thousand cords during 1919, and since the first of the year have shipped about two hundred cords to the Thorold district and to New York points. The prices paid range from \$8 to \$9.50 for rough wood, and \$13 to \$14 for peeled, depending on the location and the freight rate to destination. The demand for wood at the present time is fair.

MAY START NEW PULP MILL IN B.C.

The party of Denver capitalists consisting of E. Thomas, E. E. Sachet and William Phillips, who were recently up the Skeena examining their timber limits, are reported to be contemplating the erection of a pulp mill on the Skeena. These men bought the limits which formerly belonged to Joseph Hunter and the late W. J. Sutton, both of Victoria. They had not seen the timber, but took it on report of the cruisers. The same group hold extensive limits on the Naas River, which have never been cruised, but which are said to be well wooded with spruce, hemlock, cedar and cottonwood. In order to handle timber from both limits it is suggested that the mill will probably be built near the mouth of the Skeena on tidewater. There is known to be power going to waste on the Eestall River, which would be sufficient to run a mill and this power might be utilized for other purposes as the country develops.—Pacific Coast Lumberman.

PULP AND PAPER NEWS



Lieut. Walter Scott Waldie, of Toronto, who was a son in law of Sir Edmund Kemp, and went overseas with the 122nd Muskoka Battalion, and saw service in the Forestry Corps in England and France, and later was with the infantry, died recently at a Canadian demobilization camp in Wales while awaiting transport home. He was forty years of age and leaves a wife and three children. He was a brother of R. S. Waldie, of Toronto, President of the Toronto Paper Mfg. Co. Another brother, Second Lieut. C. P. Waldie, who was with the 8th Royal West Surreys (Imperials), lost his life at Loos in September, 1915, being first reported missing and later killed in action.

The Grand Army of Canada will, commencing next month, issue a monthly newspaper. It will contain sixteen pages of news of interest to the G. A. C. veterans.

The Development Council of Hastings County has been organized to develop the natural and industrial resources of that county, and alert officers and chairmen of committees have been elected. C. S. Rollins has been chosen as Chairman of the Timber and Pulp-wood Committee.

It is understood that the Board of Health of Toronto, will shortly urge the passing of a local by-law requiring that all bread be wrapped and making it illegal for an unsealed loaf to be offered for sale. Many bakers, who desisted wrapping their product during the war in compliance with the federal regulation forbidding the same, have again started to wrap a portion of their daily output.

The Fesserton Timber Co., of Toronto, have leased the saw mill and rossing plant of the Monteith Pulp and Timber Co. at Monteith, Ont., and will operate the same during the coming year. The mill has a sawing capacity of 30,000 feet a day, cutting principally spruce, and the slasher will take care of about 100 cords daily of pulp wood.

Captain J. R. F. Stewart, formerly of Edmonton, Alta., who enlisted with the 177th (Simeoe) Battalion and went overseas two years ago, has returned and is spending a few weeks in Toronto. He is a son of Elish Stewart, of Toronto, Vice-President of the Spruce Falls Pulp and Paper Co., who will shortly erect a 150 ton newsprint mill at Kapuskasing, in Northern Ontario.

A federal charter has been granted to War Publications, Limited, with headquarters in Ottawa, and a capital stock of \$50,000.

A. P. Costigane, of Toronto, Safety Engineer of the Ontario Pulp and Paper Makers' Safety Association, was in Chicago this week attending a meeting of the Executive of the National Safety Council. Mr. Costigane is the Chairman of the Pulp and Paper Section of the N. S. C. W. H. Cameron, of Chicago, general manager of the National Safety Council, has resigned to take an executive position with the Eastman Kodak people in Rochester, and was made the recipient of a suitable presentation in token of his

able and faithful services on behalf of the organization.

An interesting revelation in the printing of wall or hanging paper is being given in a large department store in Toronto showing the progress that has been made in this line of business during the past fifty years. Half a century ago all the color designs on wall paper were produced by means of an old time stamping or blocking machine, which turned out six rolls per hour, one color being applied at a time. The process was slow and every color was a separate operation with the block printing process. To-day modern machines turn out 600 rolls per day in as many as twelve different colors at one operation. The hand blocking of hanging paper has aroused much interest, and the work is watched daily by a large crowd of spectators.

It is understood that the forthcoming financial statement of the Abitibi Power and Paper Co., of Iroquois Falls, Ont., will show that about ten per cent has been earned on the common stock. Last month the mill set a new high record in the production of newsprint paper, turning out 228 tons per day, while the output of sulphite pulp was around 130 tons.

Extensive interior alterations have been made to the quarters of Barber-Ellis, Limited, of Toronto, whereby the executive offices have been rearranged, and a larger and more commodious sample room provided.

Duncan Chisholm, of Toronto, President of the Mattagami Pulp and Paper Co., who has been in England for some time, has returned to Toronto accompanied by his wife and family.

G. W. Saunders, of the Mattagami Pulp and Paper Co., was in New York recently attending an important meeting of the company, which will shortly add another drying machine as well as a baling machine to their equipment at Smooth Rock Falls.

The Canadian Motor, Tractor and Implement Trade Journal is a new trade paper which will make its appearance in Toronto next month, and will cater to dealers and jobbers in general selling these lines. The new paper will be issued by the MacLean Publishing Co.

The Toronto Globe is preparing to recognize its 75th anniversary. Several families have been subscribers of the Globe since its inception in 1844, and the paper is compiling a list of these veteran readers.

The pulp and paper division of the Bathurst Lumber Co., Bathurst, N.B., intend adding fourteen new dryers to their sulphite drying machine, and also twelve hand barkers to their wood room, which will increase the daily output of sulphite pulp to sixty tons a day, an addition of ten tons. The output of sulphite pulp will also be added to by ten tons a day, and the facilities of the concrete liquor storage tanks augmented so that the production of sulphate will be brought up to sixty tons daily, the same as in the sulphite branch.

ANNUAL MEETINGS OF PAPER COMPANIES.

At the annual meeting of the **Provincial Paper Mills Co., Limited**, which was held in Toronto on February 19th, a satisfactory financial report was presented, a summary of which appeared in the last issue of the "Pulp and Paper Magazine." I. H. Weldon, President, presided. In the course of a review of the operations for 1918, he stated that while the profits for the year were not as large as during the previous one, yet, under the conditions existing, and which had to be overcome, he thought that the showing was an encouraging one. In referring to the Port Arthur Pulp and Paper Co., which is a subsidiary of the Provincial Co., he added that the plant was now turning out about fifty tons a day of sulphite pulp, bleached and unbleached, and about half of this was used in the mills of the Provincial Co., and the balance sold to other plants in Canada and the United States. He remarked that the investment in the Port Arthur Co. would undoubtedly continue to be an asset to the Provincial Pulp and Paper organization. Regarding the future he said, "There will probably be unsettled conditions for some time. At present there is a very satisfactory amount of orders on the books of the Provincial Co. This, taken in conjunction with the probability that many concerns, in changing to peace-time conditions, will increase their advertising and consequently their use of paper, leads me to believe that the paper business will be in a more favorable position than many other industries for some time to come."

The following officers were elected: President, I. H. Weldon, Toronto; Vice-President, T. A. Weldon, Thorold; Sec.-Treas., S. F. Duncan, Toronto; Directors, I. H. Weldon, T. A. Weldon, S. F. Duncan, Alex. Fasken, Toronto; Sir Charles Gordon, K.C.B.E., Montreal; A. B. Connable, S. B. Monroe, W. M. Loveland and C. A. Peck, Kalamazoo, Mich. The latter takes the place on the Board of Ralph Emery, of Kalamazoo, who passed away suddenly in December last while on a business trip to New York.

The annual meeting of the **Interlake Tissue Mills, Limited**, whose plant is at Merrittton, Ont., was held Feb. 19. The statement presented was the most satisfactory in the history of the concern, and it was reported that a considerable export trade was being done. The company has orders ahead for several weeks. George Carruthers, of Toronto, was re-elected President; I. H. Weldon, Toronto, Vice-President and Treasurer; S. F. Duncan, Toronto, Secretary; Directors, Messrs. Carruthers, Weldon, Duncan, Alex. Fasken, Toronto; S. B. Monroe, A. B. Connable and C. A. Dewing, Kalamazoo, Mich.

The **Port Arthur Pulp and Paper Co.**, Port Arthur, Ont., which began operations a year ago, also held its annual meeting and elected the following officers: President, I. H. Weldon, Toronto; Vice-President, S. B. Monroe, Kalamazoo, Mich.; Sec.-Treas., S. F. Duncan, Toronto. Directors, Messrs. Weldon, Monroe, Duncan, A. B. Connable, Kalamazoo, Mich., and J. M. Mackie, Montreal. It was stated that the Port Arthur plant, which is turning out about fifty tons daily of sulphite pulp, is bleaching about thirty-five tons. All departments are now working smoothly under the able management of A. G. Pounsford, formerly of Toronto. Some discussion took place in regard to the erection of the proposed new book

paper mill at Port Arthur. Plans are being prepared for a two machine plant by the officers of the company, of which Thomas Murphy is chief engineer. If the proposition is gone on with this season only one machine will be installed at first. It will be 140 inches wide, and the output will be 20 tons daily of book and writing paper. Decision regarding the progress of the work will be determined later. The site will be adjacent to the present pulp plant, such a possibility having been provided for in the original pulp mill plans.

TELLING ENGLAND WE MAKE GOOD PULP.

The Secretary of the Canadian Pulp and Paper Association is alive to his job, all right. He has just sent the following letter to the *World's Paper Trade Review*, London, in reply to an article that reflected rather unfavorably on the ability of Canadian mills to manufacture high grade pulp. It reads:—

"I have noticed with a great deal of interest an article in the recent issue headed "Scandinavian vs. Canadian Pulps," and I notice, after reading your article, that you seem to infer that no Canadian pulp is suitable for anything else but the manufacture of newsprint and printing paper.

"You may not be aware that we have established in this country a number of mills making very fine pulps suitable for the very best papers, and of a quality that is second to none. There is one company, particularly, called the Riordon Company; the Nashwaak Company, the Port Arthur Company and the Fraser Company are three others making bleached pulp.

"I am sending you, under separate cover, samples of some of the fine papers that have been made in this country from Canadian pulp and rags, and shall be very glad to see samples of anything that can be made of equal value from Scandinavian pulp. Our news grade and easy bleaching has been of such quality as to exclude all Scandinavian pulps from the American market.

"Again, while you make reference to the spirit of patriotism that favors trade with the Colonies, we are not anxious to secure business on this basis, nor do we expect it. We are making pulp on a sound, economical basis, and expect to get the business because our product warrants it.

"If there is any question of patriotism involved I would refer you to the enclosed resolution which was passed by our Association in respect to dealing with enemy countries.

"I have never yet been able to understand why England would permit any merchandise to come from Sweden when Sweden for the past three years has been shipping all of her pulp to Germany.

"Let me assure you that we appreciate your attitude towards the Canadian manufacturers very much indeed, and hope that you will continue this good spirit."

England has recently learned a lot about our men, and a happier understanding of each by the other has resulted. The mother country has yet a few things to learn about our capacity for industrial development, and our ability to produce good goods at fair prices.



The Markets

CANADIAN MARKETS.

Toronto, February 24.—There is a steadily improving tone in the paper trade, more particularly with respect to book and writing papers. Orders are now coming in more freely, and the number of inquiries increases each week. It is expected that business from this out will grow in volume constantly, not by leaps and bounds, but in a regular way. The manufacturers do not want the rush and jolt state of affairs which prevailed a year ago. They maintain that it is not good for business, and unsettles and handicaps merchandizing methods and production. They like an even, steady flow, and believe there will be no fall in prices. It is stated that some periodical publishers have not renewed their contracts with the mills, but have been looking around to see if they could not do better by importing book paper from the other side, but have given up in this attempt, and found that the Canadian plants are, after all, charging only a fair, reasonable rate, when the high cost of production is taken into consideration. All the units of the Provincial Paper Mills Co. are active with a nice bunch of orders on the books, and the Toronto Paper Mfg. Co. report that they have enough business to keep them going for several weeks. The plant will have to close down toward the latter part of March for three weeks, while the Cornwall canal is undergoing its usual repairs and spring overhauling. Advantage will be taken of the occasion to put all departments of the mill in good working condition.

Box factories are fairly busy and envelope plants are reporting a fair, but increasing number of orders. As spring opens up things are getting brighter. Houses making fancy stationery are rushed, and the demand for choice lines of writing papers and attractive papeteries is growing all the while.

In regard to newsprint, the market continues steady, but the volume moving is not as large as it was some weeks ago. Since the close of the war and the passing of the holiday season there are not nearly as many extras issued, while circulation in some cases has fallen off. This has resulted in a lessened call, but with the present sessions of the Federal Parliament and the convening of the Provincial Legisla-

tures, the number of readers of Canadian dailies will increase, and there will be a bigger requisition for tonnage. Tissue plants are busy and are doing an export business to New Zealand and South Africa. Prices remain firm, and the outlook is good. Wrapping paper mills are fairly active, and the fact that present quotations have held for so long does not lead to the belief that there will be any come-down in the present selling figure before the middle of the summer, at any rate. The prevailing opinion in the industry is that all lines of paper in Canada will hold firm now for some months. The fact that there has been no decrease during the first four months of readjustment is taken as a good omen that values will be upheld.

The Canadian Manufacturers' Association have sent out a circular notice to the effect that a considerable amount of factory extension is being held up owing to the uncertainty prevailing in regard to what the government may do with the tariff at the present session of parliament, as a result of the demands of the United Farmers and Western Grain Growers. If the tariff issue is postponed, thereby ensuring commercial stability, manufacturers are asked to state the estimated cost of factory extension they intend to undertake, extra capital which will be invested, number of extra people that the construction contemplated will enable them to employ and extra articles which it is proposed to manufacture as a result. Information is also asked regarding British or United States firms who may establish branch factories in Canada.

Another move being made by the Canadian Manufacturers' Association is compiling a list of house organs and employees' journals which are read chiefly by industrial employees. It is proposed to submit to such journals for publication information dealing with the low standards of living among workmen in foreign competing countries, conditions of labor, the necessity of maintaining fiscal stability and other material which would tend to show how closely the interest of employer and employee are interwoven. Firms are requested to send in names of house organs issued by them, and those of any labor or employees' papers published or read extensively by em-

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES 2074
2075 MURRAY HILL, NEW YORK

Have an extensive
and steady market
for

KRAFT PULP

When you have
any surplus to
offer write us

ployees. The pulp and paper industry is vitally affected by conditions which regulate other industries, and what governs the whole manufacturing situation has a more or less reflex action upon the paper trade, for without the prosperity and expansion of Allied concerns, there will be little disposition evidenced by pulp and paper producers to make extensions and undertake the installation of new equipment.

In regard to the demand for groundwood pulp there is a little better state of affairs prevailing. The open winter has permitted most grinders to operate steadily. There is still danger of a wood famine, and this tends to keep prices up higher than they perhaps would be under normal circumstances. In regard to sulphite pulp the demand has been quiet for some weeks, but is picking up some. Stocks which consumers had on hand, are becoming exhausted, and they will soon have to enter the market to buy again. The expected relief from Europe has not been forthcoming. All firms are holding their output at the prevailing figure, and while stocks piled in some cases are rather large, there is not much anxiety felt with respect to the future. Export will take care of a great deal of the business. Since the first of the year it is reported that Canadian firms have shipped close on to ten thousand tons of sulphite to Great Britain. Last year one large concern at this time had nine thousand tons piled in its yards, which had been sold but could not be shipped owing to congestion on the railways. This year there has been no tie-up, and local shipping facilities are admirable. The reason that sulphite manufacturers are determined to hold to present prices is the fact that they do not believe if they reduced their quotations by ten or twenty per cent, they would sell any more pulp. Buyers would still hang aloof with the expectation of further drops. Lessened rates would not create any added demand under present abnormal circumstances, and the companies making sulphite believe it is worth every dollar they are asking to-day in view of the high cost of production, and the fact that Norway and Sweden are not going to be serious competitors in the American market by reason of the high price of coal, wages of labor, etc.

An interesting statement is that until the cost of pulwood comes down, and the price of other raw materials decline, manufacturers believe that the prices for pulp will hold firm. In the rag and paper stock market conditions are quiet, and a statement which has been sent out by a local mill, shows some forcible comparisons of the fluctuations. The highest pre-war price for No. 1 white shirt cuttings was 6 cents per pound, and to-day the figure is 12 cents. For washable rags the highest pre-war price was 3½ cents, and the figure now is 7¼ cents. The following shows the pre-war highest price and the present quotations:—No. 1 whites, 3¼—6; thirds and blues, 1¾—3¼; roofing stock, 1 2; hard white shavings, 2¼—3¼; soft white shavings 1¾—4¾; mixed papers, 45—50 cents.

Paper.

*News (rolls) at mill, in carload lots	\$3.45
*News (rolls) in less than carload lots	\$3.52½
*News (sheet) at mill, in carload lots	\$3.80
*News (sheets) in less than carload lots	\$3.92½
xBook papers (carload), No. 1	\$9.75
xBook papers (ton lots), No. 1	\$10.00
xBook papers (carload), No. 2	\$9.50
xBook papers (ton lots), No. 2	\$9.75

xBook papers (carload), No. 3	\$8.25
xBook papers (ton lots), No. 3	\$8.75
Ledgers	18c up
Sulphite bonds	13½c
Light tinted bonds	14½c
Dark tinted bonds	16c
White Wrapping	\$5.25
Writings No. 2 (M.F.)	12½ up
Coated book and litho, No. 1	\$12.25
Coated book and litho, No. 2	\$11.25
Coated book and litho, No. 3	\$10.50
Coated book and litho, colored	\$12.50 to \$14.00
Grey Browns	\$5.25
Writing No. 1 (S. C.)	13c up
Fibre	\$7.35
Manila, No. 1	\$7.35
Manila B.	\$5.60
Tag Manila	\$6.50
Un glazed kraft	\$9.25
Glazed kraft	\$9.25
Tissues, bleached	\$1.55 to \$2.20
Tissue (unbleached sulphite)	\$1.35 to \$1.75
Tissues, cap	\$1.00 to \$1.40
Tissues, manila	90c. to \$1.20
Natural greaseproof	.15c.
Bleached grease proof	.19c.
Genuine vegetable parchment	.27c.
Bleached white glassine	.22c.
Drug papers, whites and tints	9c. to 10c.
Paper bags, manila (discount)	35 per cent.
Paper bags, kraft	27½ and 10 per cent.
Confectionery bags	34 per cent.
Gusset bags (manila)	35 and 15 per cent.
Straw board	\$75.00
Chip board	\$75.00
Vat lined chip board	\$80.00
Filled wood board	\$83.00
News board	\$80.00
Double manila lined board	\$90.00
Manila lined folding board, chip back	\$87.50
Pulp folding board	\$95.00
Jute board, No. 3	\$75.00
Tag board	\$155.00
White patent coated board	\$115.00 to \$130.00
Grey folding board	\$115.00
Pasted board	\$95.00

*For Canada only.

x—These prices are for machine finish, super-calender one-half cent higher.

Pulp.

	F.O.B. Mill.
Groundwood pulp	\$28.00 to \$31.00
Sulphite, news grade	\$70.00 to \$80.00
Sulphite, easy bleaching	\$90.00 to \$95.00
Sulphite, bleached	\$120.00 to \$125.00
Sulphate	\$95.00 to \$100.00

Rag and Paper Stock.

No. 1 white envelope cuttings	\$5.50
No. 1 soft white shavings	\$4.00
White Blanks	\$1.40
Heavy Ledger Stock	\$2.50
No. 1 magazine	\$1.50
No. 1 book stock	\$1.30
No. 1 manilas	\$2.10
No. 1 print manila	\$1.10
Folded news	.75c
Over Issue	.90c

WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

501 Fifth Avenue, Astor Trust Building
Cor. of 42nd Street
NEW YORK CITY

Kraft	\$4.00
No. 1 clean mixed papers .....	..60c
No. 1 shirt cuttings	\$11.50
No. 1 unbleached cotton cuttings	\$10.00
No. 1 fancy shirt cuttings	\$9.25
No. 1 blue overall cuttings	\$9.25
Bleached shoe clip	\$9.25
Unbleached shoe clip	\$8.75
White cotton hosiery cuttings	\$9.75
Light colored hosiery cuttings	\$7.50
New light flannellette cuttings	\$9.25
No. 2 white shirt cuttings	\$9.00
City thirds and blues (repacked)	\$4.00
Flock and satinettes	\$2.10
Tailor rags	\$2.00

NEW YORK MARKETS.

New York, February 22.—The increased activity in the paper market which was expected to follow the convention of paper manufacturers has thus far failed to materialize. If anything, the situation has been characterized by even greater quietness than before, and there are no signs in view portending a pick up in business. Consumers in general continue to hold aloof as buyers, absorbing merely such quantities and kinds of paper as their immediate requirements call for, while jobbers evince no desire to place orders for other than stock needed to cover commitments to customers.

Most members of the trade attribute the prevailing situation almost entirely to the upset condition of business in general and to the policy of consumers of practically every commodity to hold off in purchasing other than on a hand to mouth scale pending some settlement of the peace proposition. That the paper market will ultimately broaden is the undivided opinion expressed throughout the trade. Predictions are just as freely offered now as during recent weeks that in time demand will undergo material expansion and that the market will experience a period of brisk activity. How long it will be until business improves, however, is a question regarding which no one seems willing to venture a guess.

Prices in the majority of cases are maintained. Paper mills in various parts of the country display an inclination to shut down rather than cut prices in an effort to stimulate buying, arguing that the cost of production does not justify their lowering quotations. This of course is creative of a fairly steady tone, though prices are mainly nominal and there seems no

reason to doubt that most grades of paper could be secured in some quarters at recessions from the figures generally quoted.

Newsprint is the one kind of paper which is moving in volume approximating normal. Shipments on contract are going forward steadily, and transient buyers have absorbed fairly large tonnages. Mills on the whole, however, are running below normal for this time of the year and, if anything, there is a surplus of supply in the market. Quotations are maintained, and manufacturers evince no disposition to cut prices.

Writing papers are distinctly dull. Demand has been at an exceedingly low ebb this week, and mills almost without exception have been in want of orders. According to report, a certain New England writing paper plant which makes a lot of Government paper and which has not been closed down for lack of business in seven years, is now operating on a schedule of only two to three days a week. This instance is illustrative of the inactivity reigning in the fine paper market. There have nevertheless been few alterations in prices, manufacturers quoting at about the same levels despite the dearth of orders.

Book papers are moving in comparatively good volume. Mills are not running anywhere near to full capacity but they are securing sufficient business to keep them moderately well engaged, and the market tone is steady. Periodical advertising is of broad scope and this accounts in a large measure for the present fairly heavy consumption of book paper. Wrappings and tissues have been in only routine demand. Government buying of tissues continues and this is one strong factor in the market, but trade demand has fallen off to an extent. Some grades of wrappings have sagged in price slightly, notably manilas.

A severe break in board prices has occurred. Last week mills in the East were almost all shut down, with the result that they scurried around in the market and cut prices at a rapid rate so as to acquire enough orders to warrant their resuming operations on Monday last. The reduction in prices induced a sufficient number of buyers to come into the market to keep manufacturers fairly well occupied most of this week, but the market continues easy. Chip board has sold freely at \$35 per ton, as compared with a price of \$48 two weeks ago. Other grades have declined in proportion.

GROUND WOOD.—The market for mechanical pulp is weak and dull. Few buyers are in evidence, and

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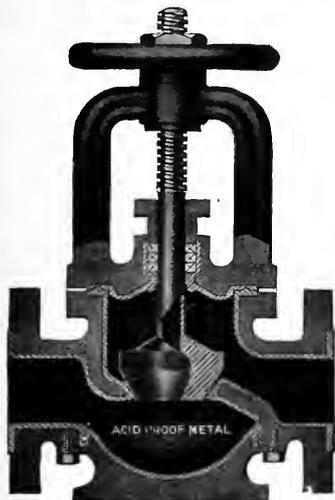
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such business as is passing consists almost entirely of shipments on contracts. There is no denying that the market is overstocked with pulp. The remarkable open weather this winter and the fear of a wood shortage and a resultant scarcity of pulp has caused manufacturers to operate very nearly at capacity throughout the season, so that nearly every producer has a large stock of surplus pulp on hand. No. 1 ground wood freshly ground has been freely offered at \$26 to \$27 a ton at the grinding plant, but only a scattering of sales has been accomplished.

CHEMICAL PULP.—As would be expected in view of the quietness prevailing in the paper market, chemical pulp has been little sought by consumers this week. Inquiry has been reported in some corners of the trade but dealers and importers assert that the great majority of paper mills evincing interest show no actual desire to buy and apparently are inquiring simply to get a line on conditions. Prices have been fairly well maintained. Odd lots of pulp have been sold at concessions, but there has been no general lowering of quotations. Domestic unbleached sulphite of newsprint quality is quoted at a range of \$70 to \$75 per ton, easy bleaching at \$90 to \$95 and Mitscherlich unbleached sulphite at \$110 to \$115. Bleached sulphite of domestic origin is held at \$120 to \$125 a ton and domestic kraft at about \$90. Foreign pulps are firmly priced at a range of nominally 9.00 to 9.50 cents a pound for bleached and 5.75 to 6.00 cents for unbleached sulphite.

RAGS.—The rag market is characterized by quietness bordering on dormancy. Consumers are buying solely in hand to mouth fashion, and with trade in their own product dull, it can be surmised how light the current movement of rags into consuming channels really is. Prices are largely nominal. Sales of repacked thirds and blues to mills at 3.15 to 3.25 cents f.o.b. New York have been reported, while roofing stock has sold at a basis of 2.60 cents New York for No. 2 packing. White rags and most grades of new cuttings have moved in too small quantity to establish definite market values.

PAPER STOCK.—Old papers are in a more or less inactive position and prices as a rule have sought lower levels this week. Low grades are now selling at substantially below the cost of production while packers claim to be realizing very little profit on the better qualities. Box board mills have kept very much in the background as buyers and, with most sellers having newspaper and mixed paper to dispose of, almost any price offered has been accepted. Flat folded news has sold to manufacturers at as low as 55 cents per hundred pounds f.o.b. New York. No. 1 mixed paper at 35 cents, container manilas at 45 cents and overissue newspapers at 80 cents. Books and magazines have been freely available at 1.25c New York, while kraft paper of No. 1 quality has been offered at around 2.80 to 2.85 cents. Shavings have moved only in scattered directions and in small volume. Nominally 5.00 cents New York for No. 1 hard white shavings and 4.00 cents for soft whites are the prices quoted.

BAGGING AND ROPE.—Old manila rope is sought in moderate quantities and prices are maintained at a range of 4.75 to 5.00 cents per pound New York. Scrap bagging, on the other hand, has been practically entirely neglected by manufacturers, and offers of No. 1 packing at 2.50 cents at the point of shipment have been numerous.

OTTAWA NOTES.

Donnacona, John R. Booth, Price Bros., and Laurantide, are to be the four principal mills whose production costs are going to finally be considered in the re-examination of the mill books now under way by the Government's official auditor, Mr. Geoffrey Clarkson, according to a well-informed report to the correspondent of the Pulp and Paper Magazine at Ottawa this week.

Brompton, on account of its high cost, has been dropped. Fort Frances, it is understood, will be examined, making the fifth mill, but as a separate price was set previously, both in the United States and Canada, it is assumed that the costs of this mill would not be included in the final summary.

Robert A. Pringle, K.C., the Paper Controller, had not, up to Tuesday morning, announced any date for the resumption of the newsprint inquiry. It appeared that the Paper Controller was awaiting the reports of Mr. Clarkson, which at the beginning of this week were not at hand. It was considered likely that the newsprint inquiry would go ahead "some time next month."

During the past week or ten days nothing further has been heard by local mill men as to the final disposition of the differentials. In this connection it was generally taken that the judgment on the differentials would be handed down about the same time as the main appeals between the manufacturers and publishers were announced by the judges of the Paper Control Tribunal.

A branch warehouse of MacFarlane, Son and Hodgson, with head offices at Montreal, was opened at Ottawa last week. This firm has maintained an office at Ottawa for a number of years. Their new office and warehouse is situated at the corner of Lisgar and Bank streets. Mr. Alex McIntosh, who for years has represented this paper house at Ottawa, is manager.

An optimistic outlook as to future paper trade condition was expressed by Mr. W. L. Goodwin, sales manager of the Richmond Paper Manufacturing Company, who visited Ottawa this week.

Mr. J. F. Taylor, secretary-treasurer of the E. B. Eddy Company, was on Monday this week elected alderman of Ward 1, Hull, in the municipal by-election over ex-Ald. Lavigne. Mr. Taylor ran a straight English ticket. His majority was fifty.

ANOTHER PAPER MAN TURNS BANKER.

Announcement was made this week in New York financial circles, of the election of Mr. D. S. Gottesman, Vice-President and General Manager of M. Gottesman & Company, Inc., Wood Pulp Merchants, 18 East 41st Street, New York City, to the directorate of the Sherman National Bank, New York City.

This will add another one to the growing number of paper and pulp men, who are taking an active interest in the financial institutions of the United States. The Sherman National Bank, located on Fifth Avenue at Thirty-Second Street, has resources in excess of \$10,000,000, and is one of the institutions which thoroughly understands the growing needs of the pulp and paper industry.

The Pulp and Paper Magazine is in receipt of a letter from a firm in Barcelona who wish to establish connections with manufacturers of paper textiles vulcanized fibre, tissues, building and roofing papers, etc., for which there is a demand in Spain.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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EDITORIAL

ONE HUNDRED MILLION DOLLARS.

A Canadian financial paper estimates, or rather, prophecies, an expenditure of \$100,000,000 in the next two years on pulp and paper mills in the Dominion. It may be so, but we are not as optimistic as that, and even question the soundness of a policy that would throw upon the world's markets such a vast amount of material as an investment of this magnitude would represent. There are so many factors to be considered that one must proceed carefully in making predictions.

A proper basis would be the fact that practically all new production in the last few years the world over, especially of newsprint, has been in Canada. Even the construction of several new mills and added machines in others did not keep up with recent demands in North America. The increased call from foreign markets makes some further expansion in Canada necessary. Such growth, however, should be sound. We cannot expect to supply the whole world at one jump. Other countries produce newsprint, and will continue to sell it. Some of them are more convenient than we are to markets which some of our mills wish to compete in. Newsprint is a standard article and will probably always be sold on a price, service and credit basis. Sentiment is a factor now in establishing connections, but that is not a sound basis on which to do business. Price has always been the big factor, and will continue so. We must reduce cost of production, and that is quite a different proposition from being forced to cut prices or keep the product. It is largely a problem for the technical man, co-operating with intelligent management.

This argument is not at all intended to throw cold water on the development of the industry in Canada. We believe it on the eve of a period of wonderful growth. But there is always a tendency, when any line of activity proves prosperous, for a great rush of new concerns to "get in on it." The result is sometimes like the railway situation, where we see two trains running on the same schedule between the same points, and neither more than half full. On the basis of capitalization accepted by the Federal Trade Commission, of \$40,000 per ton daily capacity, if an investment of \$100,000,000 were put into new newsprint plants it would just about double the present Canadian output. We simply question whether such a spurge would be advisable.

Of course, there are other lines of paper that

should be developed, but newsprint is Canada's sheet anchor. All wood pulp papers are really indigenous to the Dominion, and we should convert more of our wood into pulp at home. It is perfectly silly to ship thousands of cords of poplar to the United States and then import soda pulp to combine with our home-made sulphite pulp and rag half-stuff for our book papers. Several million dollars' worth of paper is imported annually that could and should be made in Canada. There is a growing export demand for such lines. While concentrating on the problem of making the best and cheapest newsprint in the world, we should pay more attention to possibilities in other directions. Several concerns are on the verge of extending operations, and seem likely to do so before very long. The money necessary for this additional equipment would not be very great, however.

We do expect to see something in the neighborhood of thirty or forty millions go into the expansion of this industry in the next few years, including improvements, extensions, new mills and necessary hydro-electric plants. This much would keep the equipment men in pretty good humor, and would employ a lot of Canadian labor. Most of the additional product would find a foreign market, and help square our national account. We want a sane expansion of the industry, and it is coming. There is no doubt that prospects are rosy, and we are not viewing them through blue glasses. We would simply leave the balloon out of business and let the forest patrols have the aero equipment.

FIRE PROTECTION INADEQUATE IN ONTARIO.

Those who have given thought and attention to the matter are convinced that the protection of the forests of Ontario against fire is decidedly insufficient. It has been stated that if 1919 is a dry year it will be an almost certain impossibility to prevent a fire from becoming a worse disaster than any the unfortunate province has yet known. Not only is the forest in danger, but the life, property, and future prosperity of the wooded areas of the province. This matter has a particular significance just now, when the country north of Cochrane is on the verge of development. The extension of settlements and the opening up of the country places an additional responsibility on the government which it should not be allowed to neglect.

The horrible disaster that befell Minnesota last

year was directly due to the criminal indifference and boneheaded penuriousness of the legislators of that state. Ontario cannot afford to burn up her citizens like that, nor destroy the means of livelihood of possible survivors and their descendants. The burned over barrens of parts of Ontario make one weep and shiver; weep at the suffering and loss already caused by indifference and negligence, and shiver at the certain prospect of even worse disaster unless proper measures are promptly taken. Let a few M.P.'s go up the T. & N. O., look over the scenes of former fires, get a first-hand description from survivors of what Hell is, and perhaps they would not be content to consider their duty discharged by keeping a chair warm in Toronto. It is said that the principal trouble with a lazy man is that he is dead, but can't be buried. The case of the ear-to-the-ground legislator who is indifferent to the real need of his country is even worse.

Let Ontario put some "pep" in her forest protection policy and get some real authority and discipline into forest patrol. Here is a chance for real service from and for some returned soldiers from the Forestry Corps.

THERE IS SOMETHING IN THIS IDEA.

Editor of Pulp & Paper Magazine:

Sir, — Is a centrally-located, academically-populated, university-inoculated research bureau the last word in industrial research? There is much to be said for it; but does such an atmosphere, and do such personalities get the "bang" of what is wanted in actual production?

Take heating. Great and awe-inspiring words have been written about this operation, and some work has been done as to effects, but these seem merely to have verified the surmises and confirmed the practices of the old papermakers. What has been done whereby Kipling's friend, who learned English from a "Chinese cook in a Lancashire coal-mine," can tell when to run his stock to the stuff chest? The research man should investigate such a problem right on the spot.

The Honorary Advisory Council has urged the Government to erect and equip a central building for research at Ottawa, and it is to provide laboratories and opportunity for certain fellows, university graduates only and "trained for research," to carry on scientific investigations.

That is fine—but why confine the fellowships to such purely academic gentlemen, or rather, gentlemen? Why not give them, in the study of such industrial problems as come before them, the companionship and co-operation of men trained in the mills to meet the stern necessities for research which arise from day to day, and in the problems that must be solved ere the work can proceed? The man in the mill has done the trench work of industrial research; he ought to share in the glory. It may be said that there are few mill men fitted for that kind of work. We have the word of Doctor Macallum that there were mighty few of the simon-pure researchers located, either!

Yours very truly,

(Signed) T. LINSEY CROSSLEY.

We think so, too, although the presence of said academicians might cause steric hindrance and so affect the orientation of the practical man as seriously to retard the reaction. On the other hand, it seems more likely that the presence of the man who understands what ought to be accomplished would act as a catalyzer. The central research bureau is all right. It requires the university inoculation in most cases to give one an appreciation of detail and accuracy of observation that few mill men understand, or have the patience to apply. The presence of the mill man is not only desirable, but well-nigh essential. One of the strongest points in the plan for the rehabilitation of the Forest Products Laboratories, was to have expert pulp and paper makers either on the spot or regularly available. A central bureau should make the same provision.

One of the duties of the bureau should be to "train for research" and it would be a most excellent thing if we could so train a few of the wide-awake youths in our mills who have been cooking pulp, making liquor or mixing size, and are itching to know more about it, and to make the work easier and the product better. Give them a chance, too, we say.

Let's hear from someone else.

The proposition for a municipal paper mill for Winnipeg is meeting opposition from the Board of Trade. If such an organization lacks faith in the ability of the community to conduct such an activity the idea is doomed. The Board of Trade doubtless considers that the business engagements of a city should be limited to public service activities. That is perhaps the best way to look at the matter, and leave competitive business to private enterprise. As we have already remarked, if any city could run a paper mill, Winnipeg should be capable of it. As to whether such action is good policy there is considerable question. Most experience indicates that it is not.

The announcement of a net profit of nearly 14 per cent by Howard Smith Paper Mills shows that Canada can make high grade papers to the satisfaction of both customers and shareholders. There is still room for expansion, especially in better grades of wood pulp papers and specialties.

A REAL EMPLOYEE.

"Do you see that young fellow over there?" said the manager of the factory. "He's made up his mind that some day he is going to get my job away from me."

"Is that so? I shouldn't think you'd keep him around here then."

"Great Scott, man! I'd be mighty lucky if every fellow in this plant had the same idea."—Spanish River News.

Distribution of Electrical Power in Pulp and Paper Mills*

By E. B. WARDLE, Engineer, Laurentide Company.

The mills of the Laurentide Company, Limited, are almost unique among mills of their class in that all machinery of every description is driven by electric motors with the exception of the automatic stokers for the coal burning boilers. This company therefore is peculiarly well adapted to determine the power consumed by its machinery.

The nominal daily production of the mills is about as follows: Groundwood, 240 tons; sulphite, 170 tons; newsprint, 215 tons; cardboard and wrappers, 50 tons.

Naturally, the total power consumed varies with the quality and quantity of the product of the mills. The average total power consumed during 1917 was at the rate of 21,000 h.p., and during the first nine months of 1918, was at the rate of 21,600 h.p. The ten minute peaks are ordinarily about 20% above the average. These figures are electrical horse-powers measured at the 6,600 volt bus-bars in the power station adjoining the plant, and therefore include all line-losses, step-down transformer-losses and losses in motors.

Considerable attention was paid, when the plant was equipped with motors in 1915, to efficiency of motors, and at least one motor of each different rating was fully tested out at the factory before shipment. It is therefore possible, in any individual case where it is deemed advisable, to determine the ac-

tual brake horse-power required to drive any particular machine. Generally speaking, however, only the electrical horse-power input to motors is considered, and all power consumption figures given below are on this basis.

The grinders naturally varies with operating conditions. One pair of grinders, under ordinary conditions of wood supply, power, and market, remains idle as a spare. The average daily production of each stone under present conditions is about 20 tons. An average for a month of 24 tons per stone, with a corresponding input to motor of 55 h.p. per ton has been attained, but the operating department has concluded that for their requirements, a finer grade of pulp is more desirable, to meet the particular conditions of this plant.

Chart 1 shows the electrical h.p. input per ton, and the tonnage of pulp per stone by months, from December, 1916, to September, 1918, both inclusive.

It will be noted from this chart that the rate of power input for grinding has been increased, as indicated above. The results of operation to date seem to indicate that a power consumption at the rate of between 65 brake h.p. and 70 brake h.p. per ton per day is advisable to produce the quality of pulp best suited for requirements for newsprint. This simply confirms the figures that have been used for many years in the best engineering practice.

Chart 2 is a typical 24-hour power chart for one grinder motor. The scale is such that four amperes on the chart is equivalent to about 2,730 electrical horse-power input to motor.

The cylinder pressure is regulated by a governor, so designed that the pressure for grinding varies inversely with the input current to the motor.¹ Theo-

¹ Described by G. W. Dickson, in this magazine, Jan. 2, 1919, p. 5, in his article "The Manufacture of Groundwood Pulp."

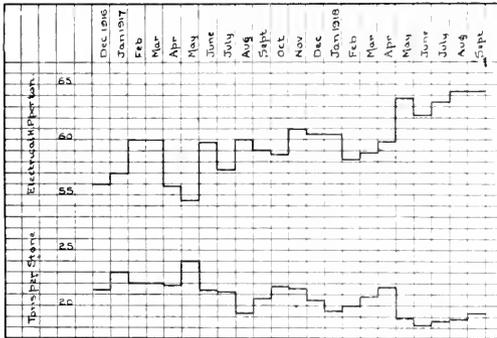


CHART-1
Grinders - Power and Production

Chart 2 is a typical 24-hour power chart for one grinder motor. The scale is such that four amperes on the chart is equivalent to about 2,730 electrical horse-power input to motor.

Power for Grinders.

There are seven 2,800 h.p. motors, 240 r.p.m. at 60 cycles, each driving two magazine-type pulp grinders having stones 62" nominal diameter by 54" face, and using 4ft. wood. The total production capacity of

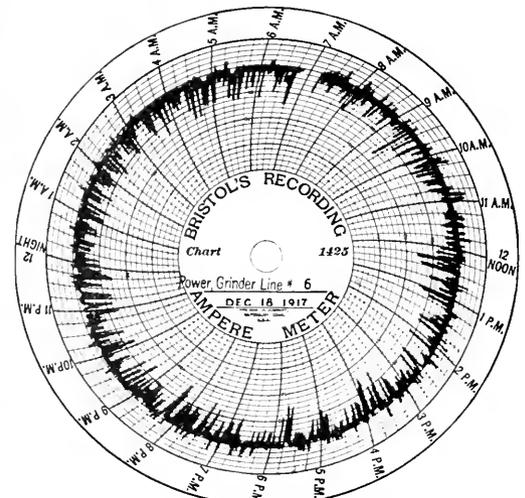


Chart II.

*Address delivered at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association, Montreal, Jan. 30-31, 1919.

retically, the power can be held to closely approximate a desired amount, but in practice it is found that no appreciable harm is done by allowing the power to vary considerably below a predetermined maximum, in short, the governor is purposely allowed to be somewhat sluggish in opening the pressure valve. This consequently does not produce the more sudden and violent strains on piping, cylinders and connections that would occur if the governor was made more sensitive in action in opening the pressure valve.

Power for Paper Machines.

The power consumed by other departments of pulp and paper mills varies considerably with such matters as location with reference to water supply, systems of handling stock, kind of type of machinery, as well as operating conditions, and therefore no hard and fast rule for power requirements per ton of production can be laid down.

Chart 3 shows the average horse power per ton of production and capacity used by six news machines for the period of December, 1916, to September, 1918, both inclusive. The dotted line shows the combined efficiency of all six news machines for the period.

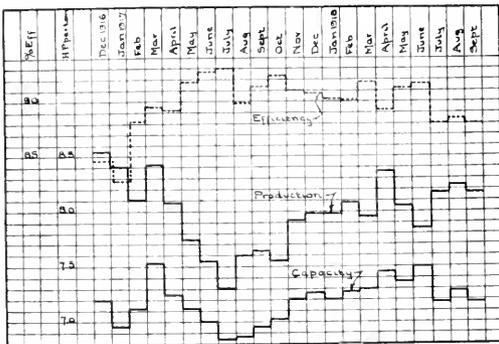


CHART-3
Paper Machines - Power and Efficiency

The following table shows the size and speed of the machines:-

Machine	Width of Wire.	Speed.
#2	120"	610-622 ft. per min.
" #3	90"	614-627 " " "
" #4	110"	610-622 " " "
" #5	124"	496-508 " " "
" #6	124"	618-630 " " "
" #7	100"	616-628 " " "

The average weight of sheet was 24" x 36"—32.7 lbs. The figures from which the above chart is made were taken from actual watt-hour meter readings and divided by the actual tonnage figures for each month, and are therefore higher than the actual brake h.p. by possibly 5% or more. The figures include power to drive all parts of the machines themselves, together with the screens, pumps and stuff chest agitators, also the exhaust fans from the dryer hoods.

Power Distribution by Departments.

The Laurentide Company's plant can probably be considered fairly typical of many paper and pulp mills having a well rounded out equipment.

Chart 4 shows graphically the distribution of power in a balanced newsprint mill with a capacity

of 215 tons per day. The following table gives the detailed figures from which the chart was made up:

(A)—GROUNDWOOD DEPARTMENT.

1.—Wood preparing . . . . .	.67 h.p. per ton.
2.—Grinding	67.00 " " "
3.—Screening	2.17 " " "
4.—Pumping	2.38 " " "
5.—Deekers, wet machines, water supply, ventilating fans and miscellaneous . . . . .	.90 " " "
Total	73.12 " " "

(B)—SULPHITE DEPARTMENT.

1.—Acid plant and wood preparing	2.09 h.p. per ton.
2.—Screening	2.06 " " "
3.—Pumping	2.38 " " "
4.—Refining system, wet machines, water supply and miscellaneous	2.16 " " "
Total	8.69 " " "

(C)—NEWSPRINT DEPARTMENT.

1.—Paper machines, including machine chests, pumps exhaust fans	7.80 h.p. per ton.
2.—Beaters, jordans, jordan chests and pumps, white water pump, finishing room machinery, roll grinder, ventilating fans and miscellaneous	4.39 " " "
Total	12.19 " " "

(D)—AUXILIARIES AND REPAIR DEPARTMENT:

1.—Air compressors, machine shop, pipe shop, pattern shop, planing mill, village water supply and miscellaneous	290 h.p.
2.—Steam plant	90 " "
3.—Mill lighting	110 " "
4.—Current to employees' houses	250 " "
Total	740 " "

On the basis of 83.1% of groundwood, and 23.0% of sulphite, the total power for a similar plant of 215 tons of newsprint per day would figure up 78.3 h.p. per ton, or about 16,840 h.p. total.

Not including the 6,600 volt motors driving grinders and water supply pumps, and a few direct current motors operating cranes and hoists, there are 205 550-volt motors of sizes up to 350 h.p., with a total rating of about 8,600 h.p.

All motors of 25 h.p. and up are equipped with am-meters, and the more important feeder circuits are also equipped with watt-hour meters. These instruments have proved to be of great assistance, and in fact they are almost essential to the safe and efficient operation of motors and machinery. They are also of use in distributing the cost of power along the different departments.

Tests should always follow the installation of new motors or any radical changes of drives or other conditions affecting motors, in order to be sure that the motor is suitable for the work, and that the installation has been properly made. Low loads on large motors generally mean low power-factor on the sys-

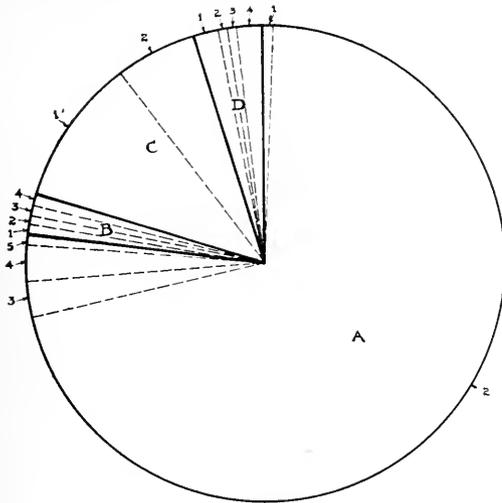


CHART-4
Distribution of Power for Newsprint Mill

tem, and continuously excessive overloads are ruinous to any motor. Chart 5 shows a form of motor test report which has been found very convenient.

The proper inspection and care of motors is of course a necessity for efficient operation. One inspector, with one assistant, takes all care of inspection and oiling for the 28,000 h.p. of motors at the Laurentide plant. The records show that the total oil required by all the motors in the plant is a little less than 5 gallons per month.

Shut downs and loss of production by reason of motor troubles are practically unknown in a well designed and well cared for installation. The only motor repairs during the three years of all electrical operation has been the rewinding of one 60 h.p. motor. The direct cause of the trouble having been a belt that was put on too tight. Practically the only trouble with up-to-date motor equipments is caused by the wear on contact points of motor starters. It is felt that some of the trouble is due to abuse of the starters, and that some of it can be overcome by improvements in design. The trouble, of course, is a cause of more annoyance than it is of expense.

Mr. Sabbaton, who was in the chair, said: I think the final result which Mr. Wardle gives us showing the amount of power consumed by the various departments in making a ton of paper is perhaps interesting, and will be a good final record for any one to compare with, or to use in the design of new power plants for pulp and paper mills.

Mr. Stadler added: I was probably one of the first ones here who had the opportunity of reading over the paper of Mr. Wardle's on Power Distribution, which I think will be a very valuable addition to your literature of Technical Details, because in reviewing my own collection, which has numerous works in it, I find there is nothing on hand which is more complete than the paper just given by Mr. Wardle. The previous observations were very much guess work in the power estimates; but I am pleased to

note that some of the estimates which were given previously come very close.

However, there is one thing which I cannot quite grasp in the paper, and that is on the subject of wood preparing, which is included in the pulp mills. What is included? Does that include your barking drums, or merely the wood conveyers? How do you distribute it. You are barking in the summer time only, as far as I know.

Mr. Wardle concluded the discussion: That is the point that I thought might have to be explained, and I should perhaps have put it in my paper. It is a hard point to explain, unless one went into a whole lot of details; otherwise, you cannot show how the power is used. As a matter of fact, we thought best at the end to lump the whole power, summer and winter, and divide it up in proportion, which belonged to the ground wood. We have five tumbling barrels, and they run from four and a half to five months; they require about 250 h.p. The balance is conveyers, which run all the year round, and a few hand barkers to do the trimming up, and the incidental use of power. We figure the average horsepower per ton throughout the year.

**DISCUSSION OF MR. STADLER'S PAPER,
The Application of Power in the Newsprint
Industry.**

It is appropriate at this point to review the discussion of Mr. Stadler's paper, which was read during the same session as that of Mr. Wardle, and which was published in the Pulp and Paper Magazine, Jan. 30, 1919. The discussions of the papers read by Prof. Kriebel and Dr. Nielsen will be printed in the near future.

Mr. Stadler concluded his paper by saying: I have

MOTOR TEST								
DEPARTMENT Paper		No. 268						
DATE 21 Jordan	3:30 p.m. March 26, 1918.							
LOCATION OF MOTOR	Beater Room (Floor #21)							
MOTOR No. 504	MAKE C.G.E.	SERIAL No. 22449						
RATING 150 H.P.	600 H.P.W.	60 CYCLES	153 AMPS	550 VOLTS				
TEMPERATURE READINGS (CENTIGRADE)								
MOTOR COILS 41			MOTOR IRON 56					
AIR 15			AIR 15					
DIFFERENCE 26			DIFFERENCE 43					
POWER TESTS								
ENTER BELOW MACHINES DRIVEN METHOD OF DRIVE DETAILS OF SPEED ETC.			R.P.M.	VOLTS	AMPS	PF	K.W.	HP
Jordan in operation 550 Rpm. Plug screwed in lightly Jordan lifted from motor Frequency of system about 63 cycles			610	625	155	84	141	169

O.E. L.B.W. Mar. 27, 1918.
CONDITION OF MOTOR Fair
SUGGESTIONS Water from Save-all should be kept away from motor.
TEST MADE BY S. Jozani Jr. MACHINE DATA BY J. Scully.

Chart 5.

given you my views on certain installations, I have started the study in our own plant, and I have given you some illustrations and certain applications which we have adopted and have found satisfactory. Now, that is all I think I can do, and I thank you for your attention.

Water Power vs. Electricity.

Mr. Pounsford asked a question. It is mentioned in this paper that an electrically driven unit is absolutely the coming thing. I would like to know if Mr. Stadler has any figures on what the cost of power per electrically driven unit is, and whether it can compete with the turbine driven unit, referring particularly to grinders.

Mr. Stadler answered: As far as this country is concerned, with the possible exception of using an engine for your paper machine drive and using exhaust steam for the drying, it seems to me you must have a pretty peculiar location if you cannot find electrical power cheaper than steam. You can get electric power at a very reasonable figure, and I would not want to say that there is anywhere in this part of Canada that I know of where you could put up a steam plant to compete with the hydro-electric installation.

I think you will find that electrical power is also cheaper than hydraulic power, if you want to make a good installation; I think you will find the time for direct connecting turbines with grinders is past. As far as the cost is concerned, it is very simple to figure. You know what efficiency you have in your power transmission, and you know what the conditions will be in a hydraulic plant. If you build a hydraulic plant, you stick it down in a hole, but if electric, you put it in a suitable location. Your building cost becomes less in the long run, than if you put your plant in a location that is not readily accessible.

I think if we come right down to it, the way to build paper mills is to develop power as a hydro-electric project, and then build the mill at a place which is most suitable from the operating and shipping point of view.

Steam Power vs. Electricity.

Mr. Keay asked if, in comparing steam driven and electrically driven machinery, it is necessary to add a considerable amount of live steam to the exhaust steam in order to furnish sufficient drying capacity.

Mr. Stadler replied: In connection with steam-driven paper machines, it is a question of simple proportion, of what demand you anticipate. In other words, I do not see the necessity for putting an expensive double expansion engine on the drive, because if you do that, you reduce the steam consumption to the paper machine, and you increase the cost, but at the same time you have to use live steam for drying. Therefore, why not adopt the simpler of the two and put a simplex engine there and make up on the drying element out of the additional live steam you would otherwise require. You always should have a certain amount of live steam—you should have a factor of safety—because in the summer time, when your steam requirements are rather low, you might otherwise have too much steam on the engine, which is a wasteful proposition, but for simplicity and low first cost, I favor the simplest type of engine, and as far as construction from an engineer's point of view—the best make you can buy.

I think, in operating under back pressure, you would probably have a steam consumption of perhaps forty pounds per horse power.

My object in giving this paper was to obtain a little information for myself. I know a mill not far from here, which is using a lot of electrically connected units, using band couplings on their grinders, and I would like to know something about those in order that we will be a little wiser ourselves.

Regarding Band Couplings.

The Vice-Chairman: Mr. Sabbaton asked whether, at the Laurentide Company, any trouble has developed where a stone breakage has occurred. Mr. Stadler, in his paper, asks whether the motor stops, or whether the connecting couplings give out, or what happens.

Mr. Mason said: We have had several stones break, but the flexible couplings have not given us any trouble. This, I think, is due to the fact of the human equation entering into it, as we have a safety switch which the operators can throw off before any harm comes to the machinery. I know in one instance this happened, but whether the band broke or not I am not sure, but there has been absolutely no trouble due to the fact that we use band couplings, and I think the opinion is that should we duplicate our present plant we would use the band couplings.

I would not say it was necessary, but it gives you another safety factor. You are liable to have a binding in your grinder. They are always liable to get out of alignment.

Mr. Stadler asked: Is it not the general experience, if your shaft should become a little eccentric your band would wear out rapidly?

Mr. Mason: We never had one. You want to make a good installation with a band coupling. You say that we would not need it, then, that is a matter of personal opinion.

The Vice-Chairman said: I believe Mr. Stadler has hit the nail on the head. In a majority of the cases where grinders were connected direct to the water wheel, the bearings were of a very poor type, and were often lubricated by squirting water upon them, and in many instances the water used contained fine sand or grit. On this account the bearings lasted but a very short time. Rigid couplings were used and the shafts got out of alignment and one of two things happened, either something broke, or the shaft was run until it became crystallized and broke. Now, we have gone to the other extreme, and have but in a very much better type of bearing with our electric motor, and in addition to that, we have put in the flexible couplings.

I quite see Mr. Stadler's point, and I think it is mighty well taken. If you put in the best type of bearing you know how to get and keep the bearings in line, he is quite right in saying that it is an open question whether the flexible coupling is as necessary as it might have been in the old type of installation. I think it is open to discussion. It undoubtedly requires a bigger room, that is, more space is required where the flexible couplings are used, and it is expensive to install, to say nothing of the up-keep, which in the particular case as mentioned by Mr. Mason has happened to amount to nothing, but which might have been considerable, and also to have caused a considerable amount of trouble.

Mr. Stadler continued: The point I want to em-

phazise is, that I assume that every plant wants to simplify its installation, therefore if we could make paper without machinery it would be an ideal thing, but our aim is to cut out everything we don't want, and for that reason I have mentioned the elastic couplings. If you are a little doubtful as to whether you need an elastic coupling or not, I would recommend that you leave as large a space as possible between the bearing and the coupling on the smaller shaft, thus permitting the shaft to deflect somewhat, without causing stresses which would induce crystallization. We have been building our mills a little too crowded. Some of the later constructions are better, especially at the Laurentide; there they have made a marvelous installation.

Mr. Wardle said: I want to confirm what the chairman has said about the couplings. The main reason that they were put in was because we always had trouble with the old-style coupling on account of poor shaft alignment. The flexible coupling which we put in in the new installation, three years ago or more, is a band type with a continuous belt around the periphery of the coupling, which is probably five foot six or so in diameter, and has caused us no trouble whatever, as far as I know, through the shaft getting out of alignment. The bearings are excellent. We have had no trouble with them at all. We hardly know we have any bearings on the grinders or the motors. The bearings are always cool, and we have no trouble with either of them.

In regard to the flexible couplings, none of them have ever broken. The grinders are set up in two units to one motor, and the outer grinder is connected to the inner grinder by means of a clamp coupling, and one time the stone broke on the outer grinder, and this coupling simply split right in two. That is the only trouble we have had with the installation at all. The flexible couplings have great strength; the shaft next to the motor is about twelve inches in diameter, and it is almost impossible to expect any flexibility at that point.

If we had to put in the same installation, I think we would again put in the flexible couplings. You get rid of a lot of the vibration between the stones and the motor, which sometimes amounts to a lot.

Mr. Van De Carr concluded the discussion: I don't believe we could have operated our plant as well without this coupling because the flexibility allows us a few degrees of rotation on the motor before we start to turn the grinder, and we do that every time. We back up the motor and the motion that the motor gets before it takes up the grinder shaft is enough to overcome the heavy starting torque required, and I don't think you could get away from it otherwise without unloading your magazine. In this instance we have gotten a benefit where the designer did not realize the need of it. It turned out a very fortunate circumstance.

An arrangement has been arrived at between the manufacturers of book and writing papers and the Canadian Paper Trade Association in connection with the sale of case lots of paper. When a printer or other consumer purchases a case lot weighing approximately 500 pounds, it must be all of one color, size, weight and grade. If the purchaser desires more than one size, or color, or weight of the same grade, he must buy at least 1,000 pounds or two cases in order to secure an assortment. This regulation will be adhered to in the future.

PROPOSED AMENDMENT OF B. C. FOREST ACT AIMED AT DEVELOPMENT OF PULP & PAPER INDUSTRY.

Vancouver, B.C., Feb. 26, 1919.—The Honorable T. D. Pattullo, Minister of Mines for B.C., introduced in the Legislature at Victoria on February 25, a Bill carrying several important amendments to the Forest Act. Timber that is covered by the timber license and where the timber is considered more valuable for pulp purposes this license may be converted into a pulp license, that is, if the holder complies with the statutory regulations and erects a pulp plant at a value of \$300,000.

Where any site is wanted for industrial purposes, and that site is on land covered by the existing timber license, provision is made for valuing of such timber. The Government is taking the power to grant a further renewal on a license that has expired owing to non-payment of current fees and such renewal to be granted for a period of one year with an extra penalty attached. To reduce the fire risk and to insure proper disposal of slash, a provision is made whereby the cost of destroying the slash shall be borne by a Forest Protection Fund, and the operator, each to pay one half.

Company Towns.

In this act the majority of the privileges formerly enjoyed by "Company Towns" in B.C. are to be abolished. The general public will have practically as free access to these towns, hereafter, as if they were under ordinary municipality regulations. It will be required that all owners of every "company town" in the future will file with the Department of Lands a map showing all roads and streets. Although the company town does not lose its property right, at the same time all roads and streets will be open in the ordinary way, but the company has the power reserved to it to close such streets whenever the land is required for company purposes.

Should transportation to and from any company town be wholly or in part by water, a safe and convenient wharf is required to be maintained by the company, which shall have approaches for passenger and freight traffic. The Lieutenant-Governor-in-Council may fix the fee payable by outsiders for use of such wharf. The penalty for violation of the act is fixed at a fine not exceeding \$500, with a further penalty of \$20 for each day during which the offence continues.

The act mentioned above referring to "Company towns" will be of interest to many readers of the Pulp and Paper Magazine, as this has been very much discussed question in B. C. and has caused considerable trouble to all concerned. Should this act be put in force it will, without doubt, assist in the settlement of many arguments, both legal and otherwise, which have arisen over the authority which companies have formerly had over company towns.

Brig.-Gen. J. B. White is back at his desk in the Biondon offices in Montreal, and is gathering the reins of his woods department. Gen. White says the pulp-wood situation for his company looks all right. He believes the experience of Canadian foresters in France will be helpful in conducting woods operations on this side. There will be something more to say about this good soldier next week.

MILL STOCKS OF PAPER IN THE U. S.

Comparing the stocks on hand at the end of the period with the average production for January, the Federal Trade Commission states that:

Newsprint mill stocks equal slightly less than 1 week's output.

Book paper mill stocks equal slightly more than 2 weeks' output.

Paperboard mill stocks equal slightly less than 2 weeks' output.

Wrapping paper mill stocks equal slightly more than 4 weeks' output.

Bag paper mill stocks equal slightly more than 1½ weeks' output.

Fine paper mill stocks equal slightly less than 5½ weeks' output.

Hanging paper mill stocks equal slightly more than 1 week's output.

Tissue paper mill stocks equal almost 3 weeks' output.

Felt and building paper mill stocks equal slightly more than 2½ weeks' output.

Miscellaneous paper mill stocks equal slightly more than 3½ weeks' output.

There was a marked increase in the stocks of all grades except newsprint, hanging and miscellaneous specialties. The opening inventory on newsprint was considerably reduced by the adjustments made at the beginning of the year.

THE NEWSPRINT MARKET FOR JANUARY, 1919.

Reports from 34 domestic manufacturers operating 55 newsprint mills are given out by the Federal Trade Commission.

The total time the 152 newsprint machines were idle decreased about 17 per cent over the preceding five-weeks' period. Nearly all time lost was due to repairs.

The gain in production for the first five weeks of 1919 compared with the first five weeks of 1918 amounts to 18,510 tons of total print, and 15,306 tons of standard news.

The December imports of newsprint were 3,274 tons less than for December, 1917. Exports for December were 6,115 tons less than for December, 1917.

The December imports of mechanically ground wood pulp were 6,487 tons less than for December, 1917. Exports of domestic wood pulp were 4,054 tons less than for December, 1917.

The imports of chemical wood pulp for December, 1918, were 11,829 tons more than the imports for December, 1917. The bulk of this tonnage was unbleached sulphite from Canada.

There was an increase of 3,689 tons in publishers' stocks during the period. Eighty-three publishing concerns held about 70 per cent of the total stocks at the end of the month.

Jobbers' stocks of both rolls and sheets increased during the period. Commitments to sell roll news were 12,588 tons greater than commitments to buy. Commitments to buy sheet news were 701 tons greater than commitments to sell.

Prices.

Jobbers' quotations for January show a slight increase in prices.

Eighty-three new contracts for newsprint aggregating 108,954 tons were reported by manufacturers during January. Practically one-half of this tonnage was sold at the Federal Trade Commission

price. The bulk of the remainder ranged from \$3.75 to \$4.00 for rolls f.o.b. mill in car lots. No new contracts for sheets were reported.

Current shipments of roll news were at prices ranging from \$3.75 to \$4.50. Current shipments of sheet news were at prices ranging from \$1.00 to \$5.00 per 100 lbs. f.o.b. mill in car lots.

More than 51 per cent. of the sulphite receipts (news grade) on contracts ranged from \$70 to \$80 per ton f.o.b. mill. The bulk of the remainder ranged higher in price. More than 48 per cent of the current receipts ranged from \$80 to \$90 per ton f.o.b. mill. The bulk of the remainder was lower in price.

About 48 per cent of the contract receipts of ground wood pulp ranged from \$25 to \$35 per ton. The remainder ranged higher in price. About 96 per cent of the current receipts of ground wood pulp ranged from \$40 to \$50 per ton. The remainder ranged lower in price.

GIVING EMPLOYMENT TO RETURNED SOLDIERS.

In the matter of giving employment to returned soldiers, the paper box manufacturers of Toronto have taken an advanced co-operative step, which is being favorably referred to. W. P. Bennett, President of the Rudd Paper Box Co. and Vice-President of the Canadian Paper Box Manufacturers' Association, has an important plan which, instead of being a union of employees is rather a union of manufacturers. Every employee that returns from the war will get his job back as far as it is possible to give it to him. If it is not feasible to place him in his own factory, Mr. Bennett will hand the returned soldier, who has worked at paper box making, a printed card on which is a list of the paper box manufacturers of Toronto, where he may be able to secure work. There are fourteen firms on the list and a note at the bottom states that the paper box industry provided steady work and good wages with attractive and sanitary surroundings. The Rudd Paper Box Co. first tries to supply the applicant with work and if it cannot do so, he is given the card and if he cannot find a position at any of the factories, he is then advised to call at the government employment bureau. The cards have been sent to all the paper box plants in Toronto and all the proprietors have promised to help in the undertaking. Mr. Bennett believes if every other industry organizes into such a union of employers and co-operation is exercised, that a big move will be effected in solving the problems of reconstruction and placing the returned men in jobs.

RIORDON STATEMENT.

The annual statement of the Riordon Pulp and Paper Co. shows net returns on common stock after deducting preferred dividends, and other charges are 18 per cent, as compared with 21.4 per cent for 1917. It is interesting to note that the statement refers to common stock, the income from which is available for bonus distribution to employees, amounting to \$290,880. The earnings were somewhat lower than in 1917, but larger than in 1916. Depreciation in the 1918 report includes provision for exhausted timber areas.

Riordon's protegee, the Ticonderoga Pulp and Paper Company, also shows a decline in profits for 1918, but 56 per cent on capital is hardly a cause for tears. The item of wages is \$77,000 above the figure for 1917, and net working capital was greatly decreased.

Soda Pulp Manufacture

By E. SUTERMEISTER, S. D. Warren Co., Westbrook, Me.

(Continued from page 218.)

In Part 1, Mr. Sutermeister discussed the preparation and composition of the cooking liquor.

PART 2.

Recovery of Lime.

The lime mud after washing out the soda is in most plants a waste product though there is in some cases a small local demand for agricultural or other purposes. In many places its disposal is quite a serious problem and this, as well as the hope of making a saving in the cost of lime, has led to numerous attempts to reburn the lime and use it over again. The equipment required for this process which is now in successful operation in several pulp mills as well as in beet sugar and alkali works, is practically the same as that used in burning cement. The wet lime mud, which is freed from water as much as possible by settling or preferably by filtration is fed into one end of a rotary kiln through which it gradually passes, and in which it is heated to the desired temperature by the combustion of natural or artificial gas. The products of combustion passing over the wet lime mud dry the latter and are themselves so reduced in temperature that very little heat is wasted. Practical experience has shown that a kiln 7 ft. in diameter and 120 ft. long is sufficient for burning 35 to 40 tons of lime per day, while for capacities between 20 and 30 tons a kiln 6 ft. by 100 ft. is ample. If the lime mud is fed to the kiln containing 45% of moisture the fuel consumption per ton of lime burned will be about 9,500 cu. ft. of natural gas or 675 lbs. of coal in the producers if producer gas is used. Local conditions which make it impossible to reduce the wet mud to 45% water will, of course, greatly increase the fuel consumption. The cost of recovery depends much on local conditions, but it has been estimated that with coal at \$2.75 per ton the cost in a 30 ton plant would be about \$2.00-\$2.25 per ton of recovered lime.²

During the cycle of operations the lime takes up a certain amount of impurities so that it is not practical to use it over and over indefinitely. It has been found necessary to remove about 10% from the circuit regularly in order to hold the impurities to a constant amount. In one plant using producer gas as a fuel it was found that in passing once through the kiln three pounds of impurities were picked up for each 100 lbs. of available calcium oxide. Analysis of the lime mud used and of the lime made from it showed the following amounts of impurities for every 100 lbs. of calcium oxide.

	Reclaimed	
	Mud.	lime.
Magnesia, MgO	1.3	1.1
Iron and Alumina, Fe ₂ O ₃ and Al ₂ O ₃ . . .	0.9	2.6
Sodium oxide, Na ₂ O	1.6	1.1
Sulphur trioxide, SO ₃	0.2	0.7
Silica, SiO ₂	0.7	2.2
	4.7	7.7

These impurities are largely derived from the fire brick lining of the kiln and are probably held mechanically since they reduce the causticizing value of the lime by only 2 per cent. If powdered coal is used instead of gas, as in some of the first experiments, as much as 6 per cent of impurities are added each time through the kiln and in this case they are evidently combined chemically with the lime as the causticizing value of the lime is reduced by fully 18%. The following analyses from another plant, using natural gas as fuel, show the composition of the lime used and that of the recovered lime, the latter being the average of samples taken during a period of six weeks.

	New lime.	Recovered lime.
Calcium carbonate, CaCO ₃	4.48	3.91
Iron and Alumina, Fe ₂ O ₃ and Al ₂ O ₃ . . .	0.15	1.62
Silica, SiO ₂	0.16	0.70
Calcium oxide, CaO	92.00	89.58
Magnesia, MgO	2.62	1.96
Undetermined	0.59	2.23

Here as in the previous case the increase in impurities is very largely caused by the kiln lining.

The recovered lime is obtained from the kiln in the form of small, rounded, slightly oval lumps ranging in size from that of a hen's egg down to dust. It is often slightly yellowish or greenish in color due to the impurities noted above, and it slakes a little slower than good rock lime.

Cooking Operations: Principles and Practice.

The chemical principles upon which this process depends are the solvent power of the caustic soda for certain constituents of the wood and the hydrolysis of other constituents resulting in the formation of products of an acid nature which are then brought into solution as salts of soda. Both of these processes neutralize the alkali and render it valueless for further work until it is regenerated. The reactions taking place are very drastic in their nature, and the degradation of the woody constituents is far more complete than for similar constituents dissolved by the sulphite process. The reaction with caustic soda starts at comparatively low temperatures as is shown by the fact that finely divided poplar wood, when treated with a 3.3% solution of caustic soda for 24 hours at 25° C., lost 20.3% of its weight. Higher temperatures still further enhance the solvent power of the alkali and greatly increase the speed with which it works.

The cooking operation in actual practice is a very simple one; as soon as the digester is charged steam is turned on and the pressure raised to the desired point as rapidly as possible, and maintained to the end of the cook. During the period of bringing up to pressure it is customary to blow off, from the top

²For further details of this problem see Paper, Nov. 17, 1915; Jour. Ind. & Eng. Chem., 1914, p. 937, and Paper Trade Jour., Oct. 14, 1915.

of the digester, the air which is present, and which if not removed would introduce an error into the pressure gauge record. This air which is "relieved" is derived in part from that present in the chips, and in part from the space not filled with chips and liquor on charging. The relief of air is generally not necessary in the rotary type of digester.

While the cooking process is apparently a simple one there are in reality a number of factors which may have a decided influence on the results obtained. Uniformity of cooking, with the production of the maximum yield of satisfactory fibre, therefore depends upon the proper adjustment of these variable factors, and a knowledge of the influence of each is essential to intelligent work. A study of each individual factor is obviously impossible on a large scale where the stock produced could not be conveniently weighed and sampled for moisture in order to determine the yield and where the cooking conditions cannot be accurately controlled because of variations in steam pressure, and other plant factors. The study is therefore best carried out in the laboratory where it is possible to control all conditions and work with far greater accuracy, and the following discussion is based largely on such work carried out by the writer. All of the experiments were made with poplar chips, and all yields are expressed as percentages of bone dry fibre on bone dry wood.

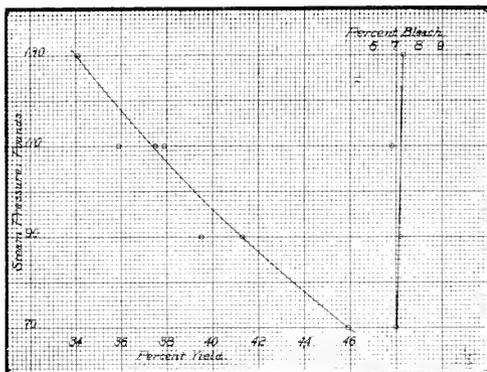


Fig. 6.—Effect of Steam Pressure on Yield.

The effect of changes in steam pressure, or, which is the same thing, the temperature of cooking, is illustrated by the curve in Fig. 6, which shows both the yield, and the bleach required to bring the fibre to a standard color. It is very evident that the yield is very greatly affected by the steam pressure employed, but that the bleaching properties are practically unaffected. Throughout the range of the experiments there is a nearly constant decrease of about 2% in yield for each 10 lbs. increase in steam pressure. Tests on a semi-commercial scale, using a cooking charge of about 400 pounds of chips, gave a yield curve which was nearly parallel to that shown though the actual yields were 8-9% higher. This difference in yield seems to be characteristic of the difference between a digester heated by the direct introduction of steam and a laboratory digester heated by the application of a gas flame.

The influence of the initial concentration of the cooking liquor is shown in Fig. 7, which indicates

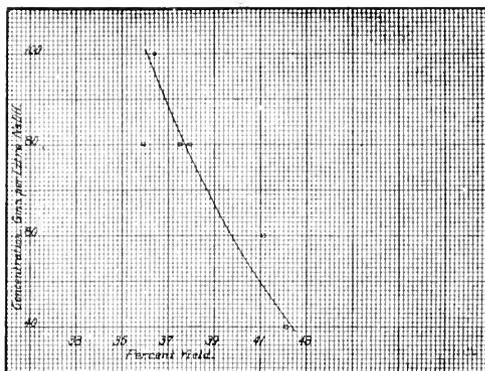


Fig. 7.—Effect of Liquor Concentration on Yield.

that reducing the concentration increases the yield slightly. This factor is not so important as that of steam pressure since an increase from 80 to 100 grams per litre decreases the yield by only 1.4%. This factor is quite closely connected in actual operations with variations of moisture in the wood used or of wetness of the steam supply. An increase in the moisture in either of these will correspondingly dilute the cooking liquor and increase the yield. This has also been demonstrated by experiments of the Forest Service, the results of which clearly showed that increased condensation increased the yield while at the same time slightly improving the bleaching properties of the fibre. Tests with chips containing varying percentages of moisture from 3 to 23% have shown that the yield is practically unaffected if this is taken into account and the strength of liquor adjusted to correspond, again indicating that it is not the amount of moisture in the wood in itself, but its influence on the cooking liquor which causes the variations.

One of the most important factors in its influence on yield and on the bleaching qualities of the pulp is the amount of caustic soda employed. Figure 8 shows the influence of changing the amount added in steps from 22 to 50% on the bone dry weight of the wood. With the lower amounts of caustic the yield is high, but the bleaching properties of the pulp

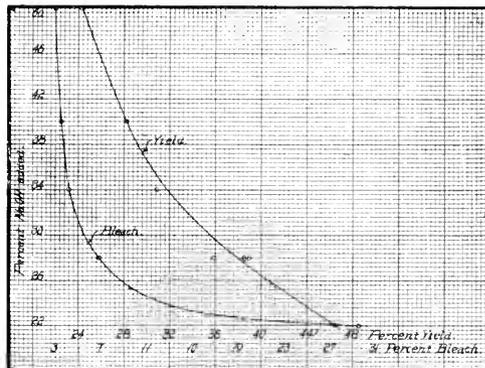


Fig. 8.—Effect on Yield and Bleach Consumption of Caustic Added.

are very unsatisfactory. When 24% of caustic soda is used the bleach required reaches a reasonable figure, while in the interval between 24 and 32% of caustic soda it decreases rapidly, and beyond 32%, increases in caustic have very little influence on the bleach required. In regard to yield of fibre it is evident that below a certain amount, which is determined by the character of the wood used, decreasing the caustic added largely increases the yield, while on the other hand increasing it beyond a certain point has comparatively little effect as the cellulose remaining is of a more resistant nature, and is not so greatly affected by alkalis. This chart shows why, in commercial work on poplar wood, it is usual to use about 25% of caustic soda, for if much less is used the bleach consumption is too high, while if much more is employed the yield suffers unduly.

In considering the amount of alkali added no attention has been paid so far to the sodium carbonate which is always present to greater or less extent, and which affects the causticity of the liquor used. The importance of high causticity from a financial standpoint has already been mentioned, but its influence on cooking is not always well recognized. In many plants it is considered that variations in causticity greatly influence the cooking process, and this is probably true where the tests of cooking liquor are made by hydrometer only or by an acidimetric determination of total alkali, for in these cases the presence of carbonate gives the liquor a fictitious value. If the amount of liquor to add is calculated from such tests the actual amount of caustic soda added may drop below the critical point and a poor cook result, but if the liquor is tested for its content of caustic soda and the volume used is based on this constituent only, then the causticity of the liquor is without influence as the carbonate present is practically so much inert material so far as cooking effect is concerned. Even when chips are cooked with soda ash in quantity chemically equivalent to 25% of caustic soda, and under such conditions that a satisfactory cook would result with the latter they are found to be hardly softened at all, and only about 25% of the total weight has been dissolved by the treatment.

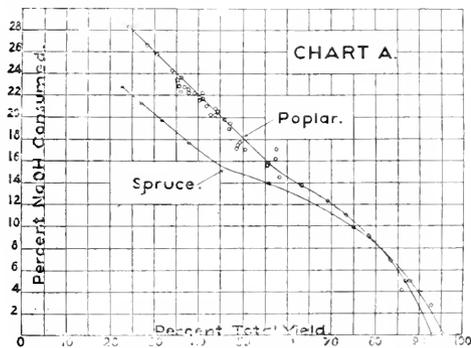


Fig. 9.—Effect on Yield of Caustic Consumed.

Closely connected with the amount of alkali added is that used up or neutralized by the acid products formed by hydrolysis of the wood. The relationship of caustic consumed and the yield of fibre was very

carefully investigated in a series of cooks in which the caustic soda added ranged up to 50% of the bone dry wood. The results were first published in 1912, and from this paper³ Figure 9 is reproduced. In these tests it was found that up to the point where 14% of caustic soda was consumed the chips were merely softened, but no fibre was produced; between 14 and 19.5% consumption appears to be the critical stage, for between these points the transition from chips, through shives to commercial fibre takes place. Above 19% consumption the action seems to be almost wholly a destruction of the cellulose, and the decrease in yield is practically constant for a given increase in caustic consumption. Spruce gives results which are very similar to those from poplar but the yield for a given consumption of caustic soda is lower. This may mean that each wood must be studied separately in order to obtain reliable data along this line, or, which seems more probable, the differences may be characteristic of those between broad-leaved and coniferous woods.

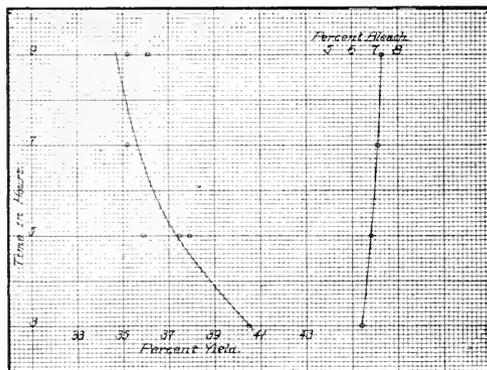


Fig. 10.—Effect of Time on Yield and Bleach Consumption.

The element of time enters into all soda cooks and the influence of variations in this factor is shown in Fig. 10, where the time at full pressure varies from 3 to 9 hours. The decrease in yield is not the same for equal increments of time, for lengthening the cook from 3 to 5 hours decreases the yield 2.7%, while the same time interval between 7 and 9 hours causes a decrease of only 0.8% in the yield. Taking everything into consideration it is to be concluded that changes in the time of cooking will have less influence than changes of similar magnitude in any of the other three variables.

The study of the time factor would be incomplete without a determination of the rate at which the reaction between the caustic soda and the wood actually takes place. The analysis for caustic soda and total alkali, of samples of liquor removed from the cooking vessel at known intervals of time enables such a study to be made easily and with fair accuracy, for knowing the proportions of caustic soda and total alkali at the start the percentage of caustic consumed may be readily calculated from their pro-

³ Communications: Eight Int. Cong. of Appd. Chem. XIII, 265.

portions at any other time according to the following formula:

$$X = C - \frac{B \times C}{A}$$

Where X = Percent NaOH used up based on bone dry wood.

A = Percent causticity at start.

B = Percent causticity at time of sample.

C = Percent NaOH added on bone dry wood.

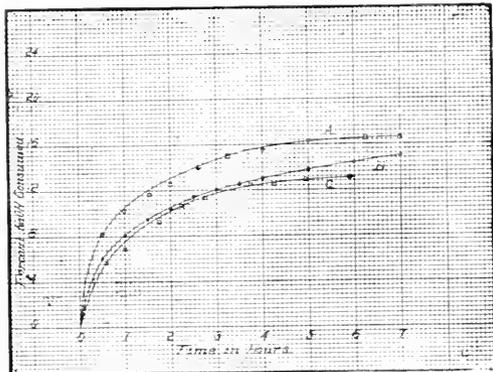


Fig. 11.—Relation of Time to Caustic Consumption.

Studies along this line have been made for various types and sizes of digesters in which poplar wood was being cooked and three typical curves are shown in Fig. 11. Curve A was obtained from a vertical, stationary digester holding about 400 lbs. of chips; curve B shows the results in a rotary digester holding about three cords of wood, while curve C is from a vertical stationary digester of a capacity of nearly fifteen cords. All three cooks were made at 110 lbs. steam pressure, and the proportion of alkali to wood was the same in each case. The percentage of caustic consumed is based on the bone dry wood which in the two smaller tests was determined by weighing the chips and sampling for moisture. In the largest digester the dry weight of wood was estimated from the average weight per cord, since it was impractical to weigh the entire charge. This may have introduced a small error into curve C, but it would affect only its position on the chart, and not its form. Tests of Englemann spruce and red alder have given results which duplicate very closely the curves on this chart, while Heuser's working on beechwood obtained very similar results. It is therefore fair to conclude that the indicated speed of the reaction is quite general for all woods generally used in the soda process.

The difference between cooks on a large and small scale is probably due to differences in the rate at which the charge is heated; this is apparently confirmed by tests on a three cord rotary digester where, by forcing the steaming beyond its normal rate, it was found possible to make the curve for rate of consumption of alkali almost exactly duplicate curve A both in form and position on the chart. The curves also show quite clearly why an increase in the time of cooking exerts only a minor influence on the

yield for the reaction takes place with such rapidity that over one half of the alkali which is used up in a seven hour cook is consumed during the first hour, despite the fact that all, or nearly all, of this time is required in heating up the charge to the full cooking pressure.

To sum up the four important factors so far considered, and to make them directly comparable with each other the following tabulation has been prepared showing what changes in each variable will cause a decrease of 1% in the yield obtained. This estimate is based on the entire range covered in the study of each variable and for comparison a summary of similar experiments by the U. S. Forest Service² is also given.

Decrease of yield of	According to experiments by	
1% caused by	The author.	U. S. Forest Service.
Increase of concentration		
by	10.0 gms. per L.	13.0 gms. per L.
Increase of NaOH		
by	1.3%	2.0%
Increase of time		
by	1.2 hours	1.0 hours
Increase of steam		
by	5.0 lbs.	5.0 lbs.

U. S. Dept. of Agri. Bull. No. 80.
(To be continued.)

PAPER IN RECONSTRUCTION WORK.

The part to be played by paper in reconstruction work in northern France and Belgium is described in an article in last Sunday's New York Sun. Ideas taken from the Germans and extension of present uses by American and British manufacturers are being combined. The work is going forward rapidly despite the shortage in wood pulp and its products.

Waterproof pasteboard houses, easily handled and put together, are probably the most important development. Such dwellings have oiled paper in place of glass windows. Screws made of wood pulp are used in putting the houses together. Tables, chairs and other pieces of furniture are being made of paper. Even kitchen utensils are so constructed.

Ease of transportation due to the enormous saving in weight, as well as the ease of replacement, are the chief factors that are making paper a universal material of reconstruction days. Tin canisters are being replaced rapidly by paper containers. Paper buckets are more durable than galvanized iron or wood.

Some other uses being made of paper are the following:

Garages, fireproofed by a special process; harness and saddlery; driving belts for machinery, and roofing tiles. Paper clothes, counterpanes, bed-quilts, and blankets were made in Germany during the latter period of the war to offset the efficacious British blockade. Some of the ships which carry the paper made material to the stricken nations will be equipped with paper lifeboats. This contribution comes from the Japanese, who do not only thoroughly waterproof the boats, but are enabled by a process of cementing to build them strong and serviceable.

The gamut of utility has by no means been run in the foregoing brief summary of possible uses to which paper can successfully be put.

² Heuser: Wochenbl. fur Papierfabr. 44, 2209.

A lazy man is a dead one who can't be buried.

Technical Section

REPORT OF COMMITTEE ON EDUCATION.

By T. L. CROSSLEY, Chairman.

In its last annual report, your committee stated that its chief objective was to attack the question of text-books. In all cases where schools have been initiated or proposed, a lack of suitable text-books was at once evident. The same trouble was experienced in the United States. As a result of correspondence with the educational committee of the Technical Association, a joint meeting was held on the sixteenth of September last in Buffalo. The full membership of both committees was present. The meeting was characterized by earnest work and marked unanimity. We were entertained at a very pleasant luncheon at Hotel Statler by the American committee. A result of the meeting was the election of a joint text-book committee as follows:

From the Technical Association:

GEORGE E. WILLIAMSON, C. P. WINSLOW,
R. S. KELLOGG.

From the Technical Section, C. P. & P. A.,

GEORGE CARRUTHERS, T. LINSEY CROSSLEY.
Subsequently, this committee met and elected Mr. Carruthers Chairman and Mr. Kellogg, Secretary.

The work of supplying text-books has three equally important stages:

1. Preparation of Material.
2. Publication, including manner of presentation and binding.
3. Distribution.

It was decided that joint action could be taken at once on the preparation of material, and the executives of the two Pulp and Paper Associations were to be asked to guarantee for preliminary expenses a fund of \$10,000, divided equally between the Canadian and United States Association.

The executive of the Canadian Pulp & Paper Association has approved of raising \$5,000.00.

For the preparation of material, Mr. J. N. Stephenson has consented to act as editor-in-chief, in collaboration with Mr. T. J. Foster, former president of the International Correspondence Schools, who is not now connected with that institution. The experience and special ability of these two gentlemen, coupled with the fact that they will have the brains of the industry in both countries to draw upon, ensures the preparation of a complete and up-to-date course for instruction and reference, covering all phases of pulp and paper making.

There is now in the hands of the members a tentative synopsis of the course prepared by Mr. Stephenson for discussion. Mr. Stephenson will be glad to have any suggestions which occur to the members. (Synopsis will appear next week).

In connection with our last report, a resolution was passed, asking the Federal Government to take action on the report of the Royal Commission on Industrial Training and Technical Education. This resolution was brought before the executive of the Pulp and Paper Association, and the matter was referred to your committee to take such action as it saw fit, to bring the matter before the Government, and to secure the cooperation of other technical bodies. Acting on these instructions, your committee laid the matter before the Canadian Chemists Convention at Ottawa, where a resolution endorsing our attitude and assuring cooperation was moved by Doctor Goodwin of Queens

University. At the invitation of your committee, a meeting was called in September at which were present (informally) representatives of:

The Engineering Institute of Canada.

The Society of Chemical Industry.

The Joint Committee of Technical Organizations.

The Canadian Textile Institute.

The Toronto Branch of the American Association of Electrical Engineers.

The Technical Section of the Pulp and Paper Association.

The Institute of Mechanical Engineers.

Doctor Merchand, Director of Technical Education, Province of Ontario, and his assistant, Mr. G. J. McKay were also present by invitation.

The result of this meeting was a general agreement on the need for immediate action, and the representatives present were asked to get the endorsement of their several executives, and report at a later meeting. We have received word from all the executives but two.

In the meantime, we understand that the matter has been taken for the present from the Department of Labor, and is in the hands of the Reconstruction Committee, Honorable A. K. McLean being chairman. We have been in communication with him, urging action. We report progress, and shall continue to carry on, believing, however, that action will be taken this session.

With reference to Night Schools and other educational work, we have information concerning work at: Thorold, Hawkesbury, Sault Ste. Marie, Port Arthur, Iroquois Falls, and Smooth Rock Falls, all in Ontario.

The influenza epidemic seriously interfered with work in all centers. Thorold had posters out to start in October, but could not open classes. Illness of students and two teachers tied up work somewhat in December. The subjects being given are: mechanical drawing, commercial work, arithmetic, dressmaking, electricity and chemistry. Mr. Bonis, the Principal, reports that an advance class in mechanical drawing has been started at the request of students who have already attended two years. Mr. O. W. Gay of the Beaverboard Company, has taken this class.

Hawkesbury had a similar experience with the epidemic. This school reports, in addition to the usual subjects, a Household Science course, attended, according to our informant, chiefly by the "technical" wives.

Sault Ste. Marie reports classes in elementary arithmetic, applied arithmetic, a lecture course in the chemistry and technology of sulphite, ground-wood and newsprint, and a practice course in free-hand sketching and dimensioning of simple objects. It will be noted that there is a decidedly practical turn to the work at the Sault.

Port Arthur has night-classes at the Collegiate Institute, and a special course in Paper Mill Chemistry was opened, but had to be shut down for the epidemic.

Iroquois Falls report a night school chiefly engaged in teaching English to foreigners who work in the plant.

Smooth Rock Falls reports a teacher in its school who takes a class through the mill once a week, and tries to apply the school work to the pupil's observations.

Your committee reports the addition to its personnel of Mr. Nelson Gain, and we have found him a decided acquisition.

The Canadian Mining Institute has inaugurated a movement for educational reform, working on lines suggested in papers read by Mr. C. V. Corless. In this connection, a meeting of technical organizations was called at Ottawa on September 20th last, and a committee was appointed to shape up a series of recommendations to present to provincial governments. Your committee was represented at that meeting by Mr. Stephenson, who was elected secretary of the committee formed. This organization has held meetings and is making progress.

At Winnipeg, Professor Osborn of the University of Manitoba is heading a movement for citizenship in Education.

The Ontario Education Association is actively working for reform in educational administration. So there is in the whole atmosphere of educational matters a stirring of the dry bones.

The city of St. Catharines has at last voted in favor of a technical school for that city with Merrittton and Thorold. For this advance we have to give credit to the workers and firms who have inaugurated and have carried on the work in Thorold.

In submitting this report for discussion, the Chairman said: "I would like some discussion regarding the preparation of text-books. This, I understand, is ready for action. It does not involve the financial co-operation of this section, that is for the Association."

Mr. R. S. Kellogg, secretary of the Joint Executive Committee, referred to a communication from the Federal Board for Vocational Education in the United States. Two or three years ago Congress authorized the Federal Vocational Board in the United States and put up a considerable amount of money at its disposal. That Board so far has not done any work with any one particular industry, such as is proposed here, but my personal impression is that the Federal Vocational Board will be very glad indeed to co-operate with an industry of the magnitude of the Pulp and Paper industry of the United States.

Mr. Kellogg read a few extracts from an outline which states what this Board might do in the United States. He mentioned some tentative arrangements which the Committee had made regarding the preparation and publication of the books. He concluded: "I think I am safe in saying, in the name of the Committee, that we want to follow our original desire that the industry control very closely the character of the work, so as to be assured it meets our requirements, and secondly, to control the copyright and the publication, and to see that the men employed on this work are the very best possible men we can secure. It is very possible indeed that some form of co-operation can be worked up with our Uncle Sam whereby we can get the benefit of some of his money, and that is very desirable. And I believe with your help, which I think we are going to get, we can be working on this program in a relatively short time."

The Chairman said: I would like to have a motion in the adoption of this report pertaining to the preparation of these text books, to make sure the Committee is authorized to get the very best men possible in the preparation of these books, so that there will be no doubt about the situation.

It was stated that careful estimate shows the need of \$30,000 for this work, to be furnished from the industry in both Canada and the United States. (The Canadian Association next day pledged \$10,000, spread over two years.)

MR. SABBATON said: That the text book proposition is a most vital one, and is the first step in getting the educational work started. If you get that, you can build up something on it. It is up to each one of the Technical Section to tackle this proposition with enthusiasm and to make possible the collection of that fund from the Association as a whole. The work of getting the text books out ought to be pushed as hard as we can push it. If you have the text books, it is easy enough for each mill, or each community to work out some method in educating the men in the best way. You want to try and educate them in the best possible way, and where there are no text books there is no foundation stone and it is hopeless. We must get the necessary funds together to get the text books started. It will take a long time any way. I think we ought to have a lot of enthusiasm about that in this country.

Mr. Carruthers, chairman of the Executive Committee on text books added: Of course it is necessary that the decision of the Directors of the Technical Section should be confirmed at this meeting. They have already passed a resolution voting \$5,000.00, and I feel that if we attended to the confirming of this action, also granting an additional five thousand (\$5,000.00) dollars for 1920, and also endorsing the arrangements as agreed upon at the General Committee Meeting in Buffalo, that it is all that will be necessary to be done at this meeting.

As a matter of course, we can not afford to hire any one in connection with the preparation of these text books, who is not absolutely competent in every way, and I think that the American section of this text book committee feel exactly the same way. We have not had any division of opinion as to the method of procedure, as has already been mentioned by the last speaker, if we hope to get the paper industry on a proper footing, and fit ourselves to make standard papers at minimum costs, and in this way meet any competition which may come from any part of the world, it is necessary that we place some instrument in the hands of the teachers, which is accessible to the personnel of the paper mills. It is true that a great deal has been written on the subject of paper making in Canada, but it is regrettable that it has never been put into comprehensive form, so as to be accessible to many people who wish to make a study of paper manufacture.

Mr. Stadler said: In seconding the motion to adopt the report, and to urge its support by the main association, Mr. Carruthers has the right idea in what he said with reference to the very careful consideration which should be given this matter by both the American and the Canadian industry to select none but the best men suitable for the work.

Permit me to add, that we should select men who are active in their work, who understand the principles of the work, and be careful not to get men who are of a promotive nature, because the proposition is promoted by the industry itself. I just put this as a kind of a little memorandum, that the careful selection of the type of men for that purpose is very important. The text books are very necessary, and the work should be started with the least possible delay.



UNITED STATES NOTES

A process for washing old paper stock is said to have been perfected whereby the Bryant Paper Company, of Kalamazoo, Michigan, expects to save annually thousands of dollars in labor, power and time. The new system has been worked out by William J. Herrbold, master mechanic, and Charles Keelan, general superintendent of the Bryant Company's Superior division. The device, a working model of which is now in operation at the Superior division plant, is of very simple construction. The whole outfit can be driven by ninety horse-power. All the stock is handled by quick-acting valves. The services of eight men heretofore required in stock washing operations are dispensed with by use of the new system. The device will readily fit into any paper mill and can be used in connection with present equipment. The Bryant Company's working model has stood up under the most trying tests.

The Ballston Spa paper mills of the Union Bag and Paper Company have been sold to Frank Bischoff, a large candy manufacturer.

Negotiations have been concluded between Marshall Field and Co., and the Phipps Brothers of New York, John S., Henry C., and Howard, owners of the Kenwood Manufacturing Company, for a long term lease of a modern factory to be erected in Chicago. A site for a plant has been secured, located at 47th and Whipple streets. As soon as the factory can be put into operation, the company plans to turn out bags and paper containers as its principal product.

The annual Rivers and Harbors bill, recently passed by the United States Senate, carries an amendment proposed by Senator Pomerene, of Ohio, which assures paper men and other representative manufacturers in the Miami Valley of waterway improvements that will greatly help the industries located there. Senator Pomerene's amendment provides for a survey of the Miami and Erie Canal, with a view of making it a 12 foot waterway from Toledo to Cincinnati. Much of the credit for the successful outcome of the fight for the improvements belongs to the Miami Valley Paper Makers' Association, which has been in the thick of it from the first.

The Eddy Paper Company, of Three Rivers, and White Pigeon, Michigan, is increasing its capital stock from \$1,000,000 to \$2,250,000.

If approval can be obtained from State officials to flood certain State lands, the Black River district of northern New York is to have water storage at the river's head waters which will double and possibly triple the power facilities. The Watertown Common Council recently passed a resolution directing the mayor to petition the Conservation Commission, the State Engineer, and the Attorney-General on behalf of the city for permission to go ahead with the project. The sentiment back of the effort is widespread. Every power owner in the Black River watershed, every municipal community reaping the benefits of industry and taking water supply from the stream, and every farmer in the section is strongly in favor of having the plan carried out.

The mill of the Hadley Paper Company Corporation at Hadley, New York, recently purchased by Joseph Gatti, is being rebuilt. Mr. Gatti has formed a company named the Nu Era Paper Company, to handle the product of this mill. W. H. Gould, of the Hoboken Paper Mill Company, Inc., has charge of the remodelling work on the mill.

A charter has been granted at Albany to the S. and S. Corrugated Paper Machinery Company, Inc., organized to carry on a machine shop and factory supplies business in Brooklyn. E. and M. Saint Eve and E. F. Stern, 580 St. Nicholas Ave., New York City, are the incorporators. The capitalization is \$15,000.

Harthorne, Fales & Co., members of the New York Stock Exchange, are issuing a letter on International Paper Company which was prepared by Haliburton Fales, Jr.

Mr. Robert S. Perry has resigned as President and Director of The Kalbfleisch Corporation. Mr. Perry is leaving for his plantation at Cove Spring, Ga., for the recuperation of his health. Mr. Franklin H. Kalbfleisch, Chairman of the Board of Directors, of The Kalbfleisch Corporation, has also been elected to the office of President.

H. C. CLARK & SON PLANT BURNS.

Lee, Mass., February 14, 1919.—The small but well known plant of H. C. Clark & Son, manufacturers of fine paper making machinery in East Lee, was practically wiped out by fire that started from an unknown cause.

PULP MILL PROSPECTS NORTH OF COCHRANE.

We are all anxious to see progress in the North Country, says "The Broke Hustler", and the project of running the T. & N. O. Railway through to James Bay certainly should have the full support of every one in the North Land.

Dr. Cook, of Geological Department, Ottawa, says:—
"For 200 miles North of Cochrane the claybelt extends with the same dense growth of spruce and jack pine as around Cochrane, the Broadback River being practically the limit of the belt in which the timber, in places small, is never-the-less well fitted for pulp wood, while for a distance of 100 miles the land falls rapidly toward the sea, causing plenty of falls and rapids, generating unlimited water powers, thus indicating enormous possibilities for pulp and paper industries, besides which, all this vast territory shows great possibilities for agricultural development, the climatic conditions around James Bay being, in fact, more favorable to crops than those around Cochrane at the present time."

The new slasher mill of the Port Arthur Pulp and Paper mill has been completed at Port Arthur, Ont. An addition to the bleaching plant has been finished, and extra equipment installed. The company is now employing over 200 men and considering that it has been in operation only about a year the results obtained have been most encouraging.

PULP AND PAPER NEWS



An arrangement has been arrived at between the manufacturers of book and writing papers and the Canadian Paper Trade Association in connection with the sale of case lots of paper. When a printer or other consumer purchases a case lot weighing approximately 500 pounds, it must be all of one color, size, weight and grade. If the purchaser desires more than one size or color or weight of the same grade he must buy, at least, 1,000 pounds or two cases, in order to secure an assortment. This regulation will be adhered to in the future.

A federal charter has been granted to Canadian Kraft, Limited, with headquarters in Montreal, and a capital stock of \$100,000, to manufacture, export, import, buy and sell paper and paper goods of all kinds. The incorporators are F. B. Common, Geo. R. Drennan, H. W. Jackson, F. G. Bush and M. J. O'Brien, all of Montreal.

Harry Muir, for the past three years and a half on the selling staff of the National Paper Goods Co., of Hamilton, has taken a position with the Don Valley Paper Co., of Toronto, in the sales department and has entered upon his new duties.

A new organization, which has started business in Toronto at 55 Bay street, is the A. Whyte Paper Co., where an entire flat has been leased. A Whyte, the head of the company, is well known to the paper trade, having been for the past three years manager for W. V. Dawson, Limited, wholesale stationers, Montreal, and previous to that he spent a long period in Toronto as manufacturers' agent and also with the Buntin, Reid Co. Mr. Whyte is handling bonds, ledgers, book, writing and cover papers as well as bristol board and other lines and expects to do a large business in these ranges.

Frank A. Rolph, who is the head of the firm of Rolph, Clark, & Stone, Limited, lithographers and engravers, Toronto, has been elected a member of the Toronto Housing Commission.

The first spring meeting of the Toronto Press Club was held recently and the members were addressed by Arthur Stringer, the noted Canadian poet and novelist, who condemned the copyright laws of Canada as obsolete, inadequate and self contradictory. He said that it did not leave Canada on the map from the standpoint of the writer.

A charter has been granted to the National Paper Goods Co., Limited, of Hamilton, with a capital stock of \$300,000 to deal in paper and paper products of all kinds.

Sir William Gage, of W. J. Gage and Co., manufacturing stationers, Toronto, is spending the winter months in Florida.

At the annual meeting of the National Paper Co., Limited, Valleyfield, Que., a good report was presented on the operations of the past year. T. B. Little, of Montreal, was elected President and Treasurer, J. B. Morrow, Montreal, Vice-President, and S. F. Duncan, Toronto, Secretary. These gentlemen also constitute the directorate of the company. P. L. Colbert

is the manager of the plant which has been extended and improved greatly during the past few months. The drying room has had an addition of three hundred feet built to it and the racks have been lengthened, while the equipment has been thoroughly overhauled. The output is now about eight tons per day.

E. S. Munroe, of the Wilson, Munroe Co., Toronto, who is Treasurer of the Canadian Paper Trade Association, returned recently after spending a few days in New York on business.

M. S. Kilby, of Montreal, who is engaged in the manufacturers' agency business in the paper line in Montreal, has opened a branch in Toronto at 42 Adelaide Street West, under the management of C. H. Tanner. The latter was formerly in the employ of the Copp, Clark Co., Limited, and saw service overseas. Various special lines of paper will be handled.

The Canadian freight ship, Lord Dufferin, which was recently sunk in the harbor at New York after she had been rammed in the port quarter by the troop ship Aquitania, had on board a considerable quantity of casein which was being imported from South America for the various paper coating plants of the Dominion.

The regular quarterly dividend of two per cent has been declared on the stock of Price Bros. and Co., of Quebec.

Clement H. McFarlane, of McFarlane, Son and Hodgson, Montreal, was recently elected a councillor of the Montreal Board of Trade for the coming year.

C. W. Price, who has been Field Secretary of the National Safety Council, was elected general manager to succeed Mr. Cameron, who goes with the Eastman Kodak Co. S. J. Williams, late of the Accident Prevention Department, was chosen as Secretary, and E. W. Pardee as Treasurer. Mr. Costigane was successful in arranging for the loan of a couple of Safety films for three months. They will be shown during May, June and July at various points in Ontario, where there are pulp and paper mills in connection with local Safety rallies which will be conducted by Mr. Costigane.

A. G. Campion, of Montreal, was in Toronto last week calling upon his many friends in the paper trade.

The many friends of Norman J. Rateliff, secretary of the Rateliff Paper Co., Ltd., Toronto, will sympathize with him in the death of his wife, which took place recently. Mrs. Rateliff had been in poor health for some time and leaves besides her husband one daughter aged six years.

P. Kellett, manager of Bulman Bros., Limited, lithographers and printers, Winnipeg, was in Toronto and Montreal calling upon the paper trade during the past week.

E. C. Martin, of Buffalo, representing the Scott Co., of Philadelphia, Pa., who was a member of the American army for overseas service and has been released from military duty was calling upon the trade in Toronto this week for the first time in a long period.



The Markets

CANADIAN MARKETS.

Toronto, March 3, 1919.—It has been intimated to the book and writing mills that the investigation into book, half-tone newspapers will not be proceeded with by the Federal Government, and also that the inquiry into the books of the Riordon Pulp and Paper Co., which was to have been conducted by G. T. Clarkson, auditor, will not be permitted. The reason alleged for this is that a very small proportion of the product of the plant is sold to the book mills in Canada, most of the concerns in this line making their own sulphite; and consequently, whatever figure the Riordon Co. charged for book sulphite, would have little or no effect upon the rates obtained for book paper. The output of that company is largely disposed of across the border or overseas, and hence the cost plays no important component part in the quotations for book papers in the Dominion. Apparently the last has been heard of the book paper inquiry which was started over a year and a half ago. The books of only one mill were audited, and it was shown by the figures submitted at the recent sitting in Toronto that the profits made on the finished product of the industry were only fair and reasonable, and that no exorbitant figure had been asked by the mill for its various lines of paper. The profits of the concern in question were considerably less than a year ago, as revealed by the annual statement.

The mills declare they are not anxious to take aboard any more business from publishers, as they have not been making any money on that portion of their output, and they are not willing to quote prices indiscriminately. They prefer to attend to the ordinary commercial requisitions on which they can earn a fair return. Business with the book mills is keeping up well, and the manufacturers deny there is any combination or understanding among them as is alleged by the periodical publishers. They simply decline to furnish figures when they know that they cannot make money on the business that is offering, and say they can get enough orders outside. Business with jobbers is picking up splendidly and, although there are not many large orders placed for other than immediate wants, these are coming in fairly well, and as spring opens up there appears to be

an improvement. Prices are holding firm, and many houses are getting out new price lists and catalogs as well as booklets and other printed matter in order to get once more into line. A number of industries, which switched to war work, are reverting to their regular channels and again wish to send out literature announcing the resumption of their former business, all of which makes trade for the printers who are fairly busy, with the prospects improving all the while. There is a feeling that this will be a big business year after all, and jobbers must soon enter the market to replenish their stocks, which are not too large.

The pulp market remains unchanged, and prices are holding where they were. Business with specialty mills is pretty good, and manufacturing stationers report that they are active, while coated paper plants have been getting in some nice orders during the past few days.

In the rag stock market business is good, but in the paper stock line there is quietness on the cheaper grades. White blanks are moving slowly, and there is but small requisition for new manila cuttings. Board mills are fairly busy, and paper box factories report that business is beginning to pick up. It is stated that the present prices on all lines of board will be continued for another three months, and an announcement to this effect is expected this week.

The demand for newsprint has picked up considerably, and the report that there is a world shortage of news has helped to make the market active. There is a big call for newsprint abroad, and things generally will show more activity as bottoms become available for export. The recent activity in pulp and paper stocks and the announcement that several new projects will go ahead, all indicate there are good times coming in the paper business, and that this industry will operate through the period of reconstruction with less loss of business and trouble than many others. The prophecy is ventured that if prices in paper of all kinds can hold for another month (and there is no indication that they will not), the turnover during the coming year will show as large returns in volume as during the past one, which, on the whole, was encouraging.

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The pulp and paper business in Canada is much more active than across the line, and if things pick up over there in the near future, as is predicted, there will be a good steady trade all summer. Envelope plants are doing a fair turnover, wrapping paper mills are getting busier, and salesmen, who have been out on the road during the past few weeks, report that there is every promise of good, fair sized orders materializing right along. The feeling that the bottom was going to drop out of the paper game is disappearing, and mills are now in a fine position to make much more prompt deliveries than they have for some time past. Transportation facilities are good, labor is plentiful, and coal can be secured in abundance. Manufacturing costs are high, and will continue so, and this will naturally keep paper up to its present values. There is no talk of reducing wages, and mills were never turning out as excellent paper as they are now. The quality of the product is such that purchasers are buying the best, and will not be satisfied with anything else. There is no big demand as might be expected for the cheaper lines. The feeling all around is one of confidence and assurance. All eyes are on Canada to develop rapidly as a great pulp and paper country, and great strides will be made in this direction during 1919.

A change in the price of kraft has just gone into effect and the mill rate to jobbers in car load lots on both glazed and unglazed has been reduced to nine cents. The figure up to the present has been nine and one-quarter cents. The reason for the easing off is that the quotation for sulphate pulp has dropped slightly and the market has not been as active as it was for kraft papers which, in consideration of the rate charged for wrappings was regarded by the trade as a little high.

There has also been a reduction of from twenty-five to thirty per cent. in coated blanks. The decrease applies to coated on one side, 3, 4, 6, 8 and 10 ply, and coated on both sides, 4, 6 and 8 ply; railroad board, 6 ply; translucent bristol white 3 and 5 ply and translucent bristol tints, 3 and 5 ply. The usual discount will apply as in the past. It is understood that the reason for the decline is that American mills, which find business dull, have been seeking to secure a market for their product in this line in Canada and in order to meet the competition the plants in the Dominion have made the cut.

It is expected that a large amount of kraft paper will be shipped to England now that transportation is opening up and freight rates are reasonable. Some Canadian plants have large stocks on hand awaiting bottoms.

NEW YORK MARKETS.

New York, March 1.—Demand for the various grades of paper has undergone no perceptible expansion this week. The market is still in a decidedly quiet position, and while some trade factors say they can perceive slightly more interest among buyers of certain classes of paper, practically all declare that consumers are purchasing only on a hand to mouth scale and that the aggregate movement of supplies into consuming channels is much smaller than is customary for this season of the year. Jobbers and dealers for the most part have come to the conclusion that no material improvement can be expected until the reserve supplies which were stored up by printers and other consumers are used up.

Despite the continued lack of important demand, prices on most kinds of paper are maintained. Manufacturers apparently are of the opinion that any lowering of quotations on their part would doubtless result in making buyers hold off to a larger degree than they are, and consequently evince no disposition to cut prices. Then, too, the cost of production is a factor which is being taken into consideration. Manufacturers insist that labor, fuel and most descriptions of raw material are fully as expensive to-day as at any time in the past, and that there are no present indications of any of them becoming cheaper.

Newsprint is moving in a routine manner and prices are at about the same levels. News in rolls is quoted at between 3.25 and 3.50 cents per pound at the mill on contract, while to transient buyers, around 4.00 cents is quoted. Side runs are priced at 4.00 to 4.25 cents and sheets at 4.25 to 4.75 cents, depending on the grade and the tonnage involved. Contract customers are doing little additional buying for the moment. Advertising in the daily newspapers has fallen off to no little extent during the past few weeks and the editions of most papers have been cut down to the point where publishers are seldom occasioned to seek paper in the open market.

Book papers are in limited demand. On the whole mills are securing a fair volume of business, but market activity does not commence to approximate that of normal times, and there is scarcely a mill in the country running full or anywhere near it. Machine finished book is quoted at 7.50 to 8.00 cents per pound at the mill, and the probabilities are supplies could be secured in some quarters at lower prices.

Fine papers are still badly neglected by buyers. Manufacturers are operating only at a small percentage of capacity, and while prices are quotably maintained on most grades, the tendency is downward. Tissues are sought in moderate volume and quotations are steady. No. 1 white tissue paper is quoted at \$1.10 to \$1.20 at the mill, and No. 2 white and manila at \$1.00 to \$1.05. Wrappings are moving in a restricted way at a price basis of 8.50 to 8.75 cents a pound for No. 1 domestic kraft.

Boards are quiet. The reduction in prices has had the effect of causing consumers to let up even in the small amount of buying that they were doing, and mills in general are seriously in need of orders. Chip is priced at about \$35 a ton, with news board quoted at around \$40 and binder board at \$60. Roofing paper mills are almost entirely shut down. Demand for felt has eased off to a deplorable ebb and manufacturers are having little trouble in filling the orders received from stock. It is understood that the Government has a large quantity of roofing felt to dispose of and this is a quieting factor.

Groundwood.—Buying interest in groundwood continues slack. Local dealers and mill agents report having scant success in their efforts to dispose of pulp, and there is a distinct easiness in quotations. Only the high cost of manufacture sustains prices on their present level, and indications are some grinders could be induced to sell at cheaper figures. About \$26 a ton at the grinding mill is the price commonly asked.

Chemical Pulp.—Chemical fibres are moving in a scattered manner and in limited volume. Consumers for the most part have their current requirements covered by contract supplies and are purchasing spot pulp only in infrequent cases. Prices are fairly steady. Bleached sulphite has eased off a bit, offerings at

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5.50 cents a pound having been noted, and sales of unbleached sulphite at prices below the general run of quotations have been recorded in some instances. There is, however, no great selling pressure in evidence. Pulp producers and dealers are not backward in letting consumers know that they have stock for sale, but are not urging mills to buy and are generally waiting for buyers to come to them when in need of supplies. Foreign pulp is firmly held. Several fair-sized shipments have arrived at New York during the past few days, but it is stated that the bulk of the pulp was sold to arrive, with the result that warehouse stocks have been augmented little if any.

Rags.—The rag market is in an exceedingly dull condition. Manufacturers exhibit only passing interest in the offerings made by packers and dealers, and the latter assert that even when a mill is willing to buy the prices bid are invariably too low to justify consideration. Consumers appear to be in the position where they have no immediate need for fresh supplies of rags and consequently are absorbing only such stock as is to be had at bargain prices. Repacked thirds and blues have sold at 3.25 cents a pound f.o.b. New York, and some dealers doubtless have booked orders at lower prices. No. 2 repacked old whites have been obtained by mills at 4.00 cents, New York, while No. 1 repacked whites have been offered at 5.50 to 5.75 cents. Street soiled whites are available at 3.00 cents, New York; washables at 7.00 to 7.25 cents and fancy shirt cuttings at 8.00 to 8.25 cents. New white shirt cuttings are quoted at around 10.50 cents at the point of shipment, but those consumers in the market for these rags have refused to pay this much. Roofing rags are decidedly inactive. Few mills are buying and it is problematical at just how low prices supplies can be obtained. Nominally 1.70 to 1.80 cents f.o.b., New York, for No. 1 packing, is the basis of quotations.

Paper Stock.—Waste paper has continued to move into consuming channels in light volume this week, and prices have been easy. The reaction which during the past several weeks has carried values on the low qualities of stock to extremely low levels has spread to the high grades, and such descriptions of paper as shavings, kraft and manilas have sagged in price within the last few days. Hard white shavings of No. 1 quality are now selling to mills at 5.00 cents a pound New York, while No. 1 soft whites are available at 4.00c and less. Dealers are holding shavings with a greater degree of firmness than other grades, yet when they have been compelled to dispose of a portion of their holdings they have found it imperative to accept weaker prices in order to move the stock. Books and magazines are selling to manufacturers at around 1.25 cents New York, and possibly some purchases could be made at \$1.00 and even \$2.00 per ton under this figure. Kraft paper is quotable at a nominal range of 2.50 to 2.75 cents a pound. This grade has dropped consistently in price and the end of the decline does not appear yet to be reached. News papers are freely offered by dealers at 55 to 60 cents per hundred pounds New York, and No. 1 mixed paper at around 35 cents. Consumers of the low qualities of paper stock are confining their orders to small tonages, current orders rarely being for more than five cars at a time.

Bagging and Rope.—There is little change to report in the old bagging market. Demand from consuming quarters is at a low ebb and the prices at which sup-

plies are changing hands are unsatisfactory to sellers, who maintain that there is very little profit afforded them. Important buyers are almost entirely out of the market and sales as a rule involve lots of only a carload or two. No. 1 scrap bagging is quotable at about 2.50 cents per pound f.o.b., New York, and roofing bagging at about a cent cheaper. Old rope is quotably steady and is moving in a small but consistent way toward mills. Most transactions are being made at between 5.75 and 6.00 cents a pound at the shipping point. Strings are dull and easy.

MANUFACTURING COSTS IN ENGLAND.

In arguing for a continuation of the policy and price of the Paper Controller in England for the production of the paper mills, the World's Paper Trade Review says:

Publishers are now displaying a feeling of unrest over the conditions ruling newsprint in this country. The Paper Controller is charged on the one hand with maintaining the price of the domestic product at 4 43/4d., and, on the other, with preventing the importation of American and Canadian newsprint, which, it is said, is offered here at 3d. per lb. landed in Great Britain. There was a time during the war when publishers were glad of the assistance of the Controller in fixing prices, which, as now, is done on examination of the costs, a margin of profit naturally being allowed. It has to be remembered that conditions of manufacture for the time are of an artificial character, and we are much worse off here than they are across the Atlantic. As a matter of fact, it would be impossible to produce newsprint in this country at 3d. a lb. It costs £26 5s. a ton to get materials into the mills, whereas the figure of 3d. a lb. represents £28 a ton, which would leave less than £2 for manufacture and profit! The 43/4d. runs out to £40 16s. 8d. a ton. Deducting the cost of materials into the mills of £26 5s. there remains £14 11s. 8d. to cover working expenses and profit. And the margin for profit is not large. Indeed it is small compared with what many industrial undertakings expect and get. Besides, if the basis of price-fixing by the Controller was good in war time, it should be equally acceptable in the days of transition.

It is understood that an order has just been issued which removes all government restrictions on the im-

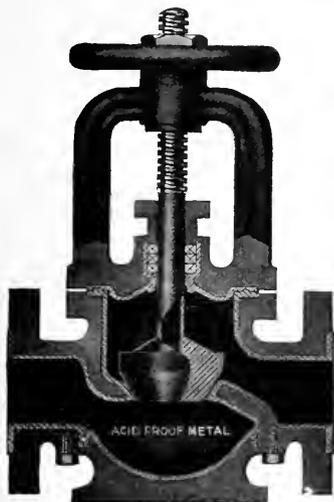
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portation of pulp and paper to Great Britain. This will mean that English mills may have to "go some" if they can compete with mills on this side under their present handicap of high priced materials, power and labor. On the other hand, it may not be possible to transport sufficient quantities to seriously affect the British market.

NEXT PROBE SESSION AT TORONTO.

March 31st will likely be the date on which the newsprint probe will resume, and the session instead of being held at Ottawa will take place at Toronto. The audit of the mill books being conducted by Mr. Clarkson was reported to be proceeding satisfactorily and up to the beginning of this week it had been heard at Ottawa that the books of the Fort Frances Company were now under investigation.

Controller Pringle when asked by the representative of the Pulp and Paper Magazine said that he did not know anything about the final termination of the bookprint probe. The writer from mill sources was informed early this week that a memorandum had been sent out by the Pulp and Paper Association stating that the bookprint probe had been called off by the government following the finding by the accountants that only one per cent of the sulphite of the Riordon Company was used in Canada.

The use and price of sulphite was one of the principal questions raised by the publishers in the bookprint investigation, and was the subject of considerable debate, terminating in an order for an investigation being made into the cost and manufacture of it.

In addition to the two above mentioned features the writer has also been informed that a deputation of the manufacturers waited upon Sir Thomas White some

time ago and asked that the Government remove the restrictions placed on the newsprint industry. It is rumored that the manufacturers asked that the restrictions be lifted on April 1st. No action in connection with this request had been taken by the government up to early this week.

Conditions at the John R. Booth and E. B. Eddy plants remained very much the same as they have been for the past four or five weeks, the labor situation, while rumblings of a reported demand for another increase in wages, were heard, did not actually show any change. The E. B. Eddy Company and John R. Booth are doing everything they can to place returned men and give them back the positions they occupied before the war or give them other employment for which they are fitted.

HAS INAUGURATED A SERVICE BUREAU.

George H. K. Mitford, formerly editor of the Toronto Sunday World and past President of the Toronto Press Club, has opened an office in the Stair Building, Toronto, and under the head of The Service Bureau, of which he is President, is working up a very desirable connection in a new line. The Service Bureau undertakes publicity work, syndicating, ad-writing, sales letters, and conducts campaigns of any character.

The Mattagami Pulp and Paper Co. at Smooth Rock Falls, Ont. have bought two of the new style "U"-bar drum barkers from Fibre Making Processes, Chicago.

Mr. D. C. A. Galarneau, late forester for Algoma Central Railroad, has accepted a position with the St. Maurice Paper Company of Three Rivers. Professional foresters are proving their worth to the companies.



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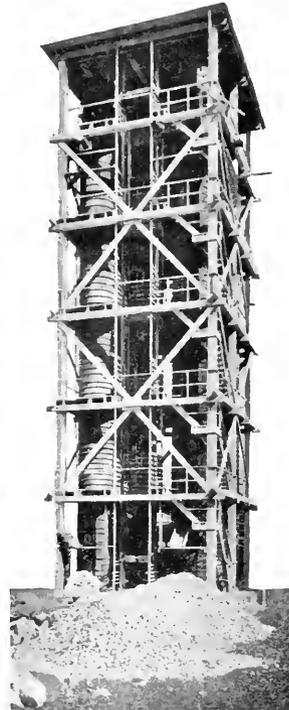
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EDITORIAL

NO FRICTION NO WORK.

Some years ago, Prof. (now Colonel) W. H. Walker said: "Where there's no friction, there's no work," with reference to educational and research work, and this applies with peculiar aptness to the present situation in Canada.

The Advisory Council for Scientific and Industrial Research has developed a plan for a central federal Bureau of Standardization and Research. A considerable number of thoughtful Canadians are determined and almost bitter in their opposition to the scheme, claiming that the University is the place for research. There are, of course, arguments on both sides. Very few of our educational institutions have facilities at all adequate to the pursuit of certain classes of investigation. On the other hand, they have some valuable apparatus (though often out of date) and competent men on the faculty who, if they had time, would be keen to undertake a greater amount of important research work. The trouble is, a professor does not as a rule have time for more than an occasional dab, possibly a coal or oil analysis, or a fragmentary inquiry into the properties of some material. He may have a spare hour on Monday, several on Tuesday, none on Wednesday, miss his supper on Thursday, and possibly work Saturday afternoon and Sunday if he is a bachelor or doesn't care for his wife's society. Good, solid, consecutive work cannot be done under such conditions. The summer vacation can be employed to good advantage perhaps, in studying a problem, but to our mind would better be used in the garden or woods, or in a manufacturing plant, getting first hand knowledge of industrial problems and an inspiration that would make lecture and laboratory courses of greater interest and value to the student.

The University is primarily a "knowledge factory" where student learns (or ought to) how to do things, and why. A part of this training should certainly be an organized attack on a problem, not so much for the contribution to our general knowledge, as for the training of the student in research tactics. We do not wish to convey the idea that the increase in knowledge is not appreciated. Many exceedingly valuable discoveries, especially of fundamental facts and laws have been made or confirmed, and theories advanced and disproved, by the work of professors with, or without, the aid of students. A teacher can sometimes organize an investigation so as to attack it in a series of researches by succeeding classes, but student work

can be relied on to do no more than contribute incidentally to knowledge. Too many things come in to upset the best laid plans—such as difficulties of equipment, time, material and temperament. By all means let the college and university go on and train young men and women in the fundamentals of science, the tactics of research and the appreciation and understanding of history, economics and language, but we need more than that for the development of our industrial enterprise along scientific lines.

The most notable recent success in industrial research has been made in two distinctly different lines. In the first place, large and wealthy firms have research departments that make many universities look like a movie show alongside of grand opera. They work on both fundamental and operating problems, and get results because they can hammer away till something is disclosed. The other case is the Mellon Institute idea, where a concern, too poor to maintain an elaborate research organization can, with the aid of a university, by supporting an investigator and perhaps supplying special equipment, have an investigation made into a specific problem. Some excellent results of this plan are on record. The financial interest insures the attention of the concern to the research and an appreciation of its value.

One striking objection to the conduct of this kind of work by a federal laboratory is that a lot of effort would be wasted or unappreciated. In other words, "What we get for nothing is generally worth it." An instance of this occurred recently. A technical man asked the Forest Products Laboratories if slab wood could be used for pulp. He was informed that the slab contained the best fibre and was delighted with the information. It was entirely new to him, although the whole investigation had been published and he had a copy. Of course, we never miss the water till the well goes dry, so it is doubtful whether this is a valid argument against the collection of all the fundamental information we can get in regard to our natural resources and even manufactured products.

A central federal laboratory for standards is a crying need. Standards can not be established and maintained without research, neither can specifications be worked out for the purchase of materials for public works or the use of governmental departments. And standards and specifications should be backed up by check analyses and tests. How far such a laboratory should go in the matter of purely industrial research

is open to question, but we continue in the belief that fundamental problems and many others can and ought to be conducted in and by a central bureau. This should include all government laboratories now doing research work, either by co-ordination or merging. Another serious question is whether the Council should assume administrative duties. As at present constituted the Council is supposed to be advisory, but might be a useful agent in crystallizing our research facilities into one body if it would proceed with sufficient tact and care.

TESTING PULP.

The perennial bone of contention between pulp makers and consumers is the determination of the amount of material they are selling or paying for. It seems a simple matter, when there is nothing in a shipment but pulp and water, to estimate the amount of each. But the problem is more difficult than it appears and the source of trouble is almost wholly in the method of obtaining a representative sample. A lot of work has been done on the subject, but no generally accepted method has yet been devised. Furthermore, the hard work of committees will be wasted and their efforts come to naught unless both buyers and sellers are willing to bury some of their own pet notions and favorite schemes, and whole-heartedly accept and practice as a uniform procedure, a standard method, formulated by a duly authorized committee and approved by the **technical men** in the industry. The dead-lock will continue indefinitely if some pin-headed purchasing agent or bull-headed manager is going to chuck the standard method in the waste basket, put a stick in the spokes of the wheels of progress by refusing to use anything but his own method.

In his report for the Groundwood Section Capt. Aeer emphasized the need of a standard method for sampling pulp and determining the moisture content and the urgency of the need. The sampling of laps has been brought to a state where closely confirmatory results are obtainable by different analysts. On another page is the report of a committee of the Technical Section having particular reference to chemical pulp in rolls. It should be read with care, tried out carefully and revised if necessary. It should be made law within a year and then may be amended if found defective. The main thing is to have "everybody doing it." Don't pigeon-hole it, help it along. What do you hire technical men for if you don't use their knowledge and ability?

THE ASSOCIATION'S TEXTBOOK.

On another page is an outline of the text book on Pulp and Paper Manufacture that is being prepared under the auspices, and with the support, of the Canadian and American Associations. Every pulp and paper man is, or should be, interested in it. Your advice, suggestions and assistance are needed to help make it what it might be.

FROM LUMBERMAN TO LEGION OF HONOR.

A conspicuous honor has been done the lumbermen and the pulp and paper industry of Canada in the climax of the military career of Brigadier-General J. B. White. Briefly told, General White has been made an officer of the Legion of Honor by the French Republic for services rendered with the French Armies. He was in command in France of the Canadian Forestry Corps, consisting of 13,000 Canadians with an additional attachment of 8,000 men. As Major White he went over with the 224th Battalion. He was recalled in 1916, when he raised and took over, as Lieutenant-Colonel, the 242nd Forestry Battalion, consisting largely of lumbermen. He was appointed director of Canadian operations and deputy-director of the British in 1917. In the New Year honors in 1918 he received



the D.S.O., and in November was promoted to Brigadier-General.

The General's military career began long before the war, as he was then in command of B. Squadron of the Duke of York's Royal Canadian (17th) Hussars. He has always been a lumberman, although his home is now in Westmount, and his standing in his profession is attested by his position as director of the Canadian Forestry Association, director of the Riordon Pulp and Paper Co., and manager of their wood department and sawmills. Just now General White is giving a great deal of time and attention in an effort to get our Provincial and Federal Governments to organize a scheme of tree planting by returned soldiers, especially those with injured lungs who need out-door work.

Raw Materials Needed by French Paper Mills

(Translated from "Le Papier" of Nov. 25, 1918, for the News Print Service Bureau.)

This is the first report of the National Bureau of Papers on the raw materials required by the French paper mills for the five years following the signing of peace.

Paris, October 10th, 1918.

To the Minister of Commerce, Industry, Posts and
Telegraphs.

Sir,

On June 20th, the advisory Paper Commission received from your department a letter dated June 12th, strongly urging that a reply be sent to the questionnaire of the British government relating to the estimation of French requirements for the twelve months following the signing of peace. These requirements are those which can be satisfied by products from British dominions. Moreover this letter requested a complete and detailed study of the requirements of the French paper industry for the five years which will follow the signing of peace. On June 22nd we remitted to you a reply to the British questionnaire. The reply was as precise as the delay permitted. Today we are forwarding to you a full report replying to the questions put in your letter of June 12th.

The raw materials of the paper industry are:

1. Vegetable tissues or plants from which are derived the cellulose, the essential constituents of paper;
2. Rags and old papers which, though not raw materials in the strict sense of the words, require a special treatment to enter into the manufacture of paper;
3. Chemical and mechanical wood pulps which, in reality, are half-stuff, and which are derived from the natural sources of the raw celluloses. These celluloses merely require a more or less prolonged trituration to be made into paper;
4. Mineral matters, or loading and sizing, which serve the purpose of imparting to the sheet certain qualities, which would be lacking if it comprised only cellulose.

If the allied governments take under their exclusive supervision and control the division among themselves of raw materials and half-stuffs, which the world's markets will possess at the end of hostilities, we may rely upon it that the practical genius of the Americans and English will gradually deprive the Germans of those raw materials which once made the riches and the fortune of their country. In the number of these industries the pulp and paper industries occupied a high position in Germany; they were fed in a moderate degree with foreign celluloses, but in a very great proportion with foreign wood; the German paper industry started from raw materials that were treated entirely in German mills. But it was not satisfied with transforming wood pulps into paper. Meanwhile, from other causes, the cellulose industry of Germany had achieved such an immense importance, owing to imports of wood, that long before the war Germany had become one of the chief exporters of paper pulps.

With Austria-Hungary she delivered annually to France, during each pre-war year, more than 65,000 tons of chemical wood pulp.

If, therefore, we should simply ask that a sufficient supply of mechanical and chemical pulps be reserved to us for the years which will follow peace, we should be doing nothing to disrupt German manufactures. Hence we should not be aiding our allies in attaining their avowed aim to destroy Germany by preventing her economic development and commercial expansion. So far from helping, we should be on our guard against assisting in that development, for we may be sure that Germany attaches the greatest importance to the existence and working of her cellulose mills, in order that she may be prepared to furnish us with pulp the first day after the war as formerly. By a general application and organization of such an industrial policy, she will obtain the assurance that she can continue after the war as before to make us her economic vassals or her negligible adversaries on the world's markets.

As a matter of fact the allied countries before the war possessed the raw materials of the paper industry; Finland, Russia, and Canada were the greatest producers of pulpwood, and Finland and Russia principally supplied Germany. The certain victory of the allied armies will leave the Entente mistress of those natural riches which should become the generators of new riches for those manufacturers who employ raw materials as the basis of their industry, that is, woods of various kinds, and not alone pulps of cellulose. The question, therefore, which we must put to ourselves is the inquiry whether the allies will continue to deprive their own industries of wood in favor of Germany, or whether the allies ought not to make a division of these products among their own manufacturers, in order to feed industries already existing and capable of a still greater development.

It is the very definite opinion of the National Bureau of Papers that a portion of these raw materials must be reserved to this country, a supply sufficient to meet the requirements of the French paper industry not only from the finish of hostilities but for the years which will follow, while due account should be taken of the probable increase in consumption, an increase which may be calculated in advance. It will be necessary, besides, to assure ourselves, by an appeal to the allied countries, and next to neutrals, for preferential treatment excluding enemy countries partly, or perhaps, entirely, that our mills which continue to manufacture paper from pulp may have the necessary supplies of wood pulps. As another measure the allied governments might usefully consider the plan of imposing on Germany a proportionate contribution of chemical wood pulps, in exchange for an annual delivery of woods which the allies possess. Chemical pulps from Germany should be divided among the allies or sold to their citizens. These pulps purchased from the Germans at cost price, and resold in friendly countries, would realize a profit for each country, besides making the German pulp industry participate in the payment of the German war indemnity. Having pro-

posed these principles, we give below our answers to the French questionnaire, as it is set forth in the letter of June 20, 1918, of the ministry of commerce. These answers complete those which were made on June 22nd, to the British questionnaire.

Possibilities of Production.

Pulpwood. French production of pulpwood, before the war, was about 500,000 steres. (A stère or cubic meter, is equivalent to one-fourth cord.) Imports were equally large or 500,000 steres. The total manufacture of chemical and mechanical pulp utilized in France would have required the gross total consumption of 3,000,000 steres. If we take into account the fact that French production of pulpwood will be reduced by approximately one-half after the war, owing to the intensive exploitations made during the course of hostilities, imports should be raised to 2,700,000 steres for the manufacture of the total quantity of chemical and mechanical pulps used annually. This figure may appear considerable. Yet it is inferior to the figures of German imports of pulpwood which, before the war, exceeded 3,000,000 steres annually. It is, of course, not a question of asking for a volume of imports so considerable that cellulose mills would be unable to consume the supply. But as their consumption will be increased by about 20,000 tons annually, representing 100,000 steres, there are grounds for asking for each of the five years which will follow the signing of peace, taking into account also the diminution of French pulpwood during the first years, — an annual importation of 850,000 steres, a figure susceptible of being greatly augmented, if French mills develop their manufacture of paper pulp.

Rags.—Before the war imports rose annually to about 20,000 tons of rags other than linen rags. Unfortunately exports of these rags were nearly 70,000 tons. It is a matter of infinite regret that the French paper industry failed to make advantageous use of all these resources. The same thing is true of linen rags. We note that, before the war, exports of linen rags exceeded imports by 27,000 tons. Besides their value for wove papers, linen rags are becoming a raw material of the first importance to the paper industry on account of the recent development in France of the manufacture of roofing boards. If the mills run short of raw materials, there will perhaps be grounds for considering a continuance of the prohibition of exports during the years which will follow the war, with exceptions in favor of our allies and by way of compensation.

Old Papers.—Imports rose annually to 47,000 tons. Exports were insignificant. Old papers came from England. Their export from England was prohibited during the war. We shall be obliged to ask our allies for a suspension of the prohibition during the years following the war, allowing us a quantity similar to that which they formerly furnished.

Esparto.—Imports of stalks, reeds, and esparto rose annually to about 10,000 tons, of which about half went to the paper mills. Northern Africa is in a position to furnish more than 150,000 tons of esparto annually now that the war is over, besides the 150,000 tons which before the war were reserved to England. The French paper industry will find in the utilization of the esparto of Northern Africa a means of freeing itself in part from dependence on foreign countries for supplies of pulp — if it will make the necessary effort.

Straw.—French mills making straw paper will find

on the national soil all the straw necessary to their industry. They have found it in the past.

Wood Pulps.—The quantities which it will be necessary to import annually may be fixed at the following figures:

Dry mechanical pulp 200,000 tons;

Dry chemical pulp 250,000 tons;

Canada will be given the preference in orders for these pulps, the agreement being made with Sweden and Norway for other supplies. A certain proportion of chemical pulps, at a special price, may be required of Germany as a war indemnity, as explained above.

Mineral Fillers.—The French paper trade imported from England about 79,000 tons of kaolin a year. This quantity will be equally necessary after the war.

So much may be said of the classical raw materials, in current use before the war. After the war we may hope that other raw materials will be available in addition to these, a hope we owe to the development of the chemical industry during the war, also to a new aspect of initiative among our paper manufacturers, which should be encouraged by a tariff more adaptable to the interests of the country. Among these new raw materials, we may cite:

Broom, which grows every where in France, particularly in Brittany and the valley of the Rhone; Seaweed abundant in the Camargue; The branches and twigs of the vine; Sorghum, an African and Indian plant, also found in France, notably in Gard; The Dwarf Fan Palm, abundant in Morocco.

It is probable, besides, that we shall find ways of utilizing a number of plant tissues, derived chiefly from ligneous woods of various species. Wood fibres of this origin are seldom used, but they are adapted to appropriate mechanical treatment preceding chemical treatment.

Summary.—To sum up: all the raw materials which have just been enumerated will guarantee to the French paper industry its former production of pulps and papers and will permit an important development of its manufacturers. But the guarantee of supplies of raw materials is necessary to ensure the commercial expansion of our country. The quantity of imports after the war may be summed up as follows:

Wood, 850,000 steres, importation from Finland, Russia and Canada;

Old papers, 40,000 to 50,000 tons (importation from England);

Esparto, 100,000 to 150,000 tons (Northern Africa);

Wood pulps, 450,000 tons (Canada, then Norway and Sweden, Germany under special conditions);

Kaolin, 70,000 tons (England).

Power Requirements of the Machinery Actually in Operation for the Manufacture of Pulp and Paper.

The actual French production of chemical and mechanical pulps requires 25,000 to 30,000 H. P., while 60,000 to 70,000 H. P. will suffice for the production in France of all the imported mechanical pulps. Yet it must be noted that production of mechanical pulp by steam power will be an obstacle because of the high cost of coal in the years that are ahead.

Relation Between Production and Consumption.

Papers.—Before the war French production was evaluated at about 700,000 tons a year. Imports were about 30,000 tons, exports about 50,000 tons. Consumption of paper in France, figures out at about 680,000 tons, or 38 lb. per capita a year. Consumption

during 1917 should be less; the rise of prices having diminished the importance of some grades. Then there is the shortage of labor in printing establishments. Considering the increase of imports in 1917, of imports of chemical pulps, consumption for 1917 may be put at about 400,000 tons. So far as we know there have been no substitutes of paper on the 1917 markets, but old papers have been used for wrappings more frequently than formerly. Stocks do not manifest a tendency to recover rapidly; prices remain high, with a bearish trend that makes buyers cautious. It seems clear that the French paper industry should be able to meet its domestic requirements. But the outcome depends upon different factors. A plan of industrial expansion completely modifying the pre-war conditions cannot be realized unless the manufacture of pulps is developed, unless the mills submit to discipline and specialization, unless the French industry is in a position to obtain freight rates on as good terms as the industry of other countries, and finally, unless coal rapidly become abundant and cheap. The attention of the allies should be drawn to this point and an important annual contribution of fuel should be demanded of Germany at a special price as a war indemnity. As regards raw materials France is bound to continue to supply England with esparto from Africa. She may also supply rags. On the other hand, France must ask from her Ally; coal, kaolin, and waste papers.

Signed: A. JANOT.

Secretary General to the Committee.

British Paper Makers Discuss Proposition.

Under the auspices of the Paper Makers' Association of Great Britain and Ireland (Incorporated) an important meeting was held at the Pillar Hall, Cannon Street Hotel, London, on the 30th ult., for the purpose of considering a number of proposals submitted by the French delegates to the Inter-Allied Program Committee. The gathering was convened upon the suggestion of the Paper Controller (Mr. H. A. Vernet) and was well attended by members of the Association and others connected with the trade from all parts of the country.

The President of the Association, Mr. Lewis Evans, D.L., Chairman (of Messrs. John Dickinson and Co., Ltd.), presided over the earlier stages of the proceedings, and was supported on the platform by Mr. H. A. Vernet (the Controller of Paper), Mr. R. Hall Caine (the Deputy-Controller), and Mr. W. A. Foster, B.A. (Secretary of the Association).

The Paper Controller took up the French Memorandum point by point and gave his interpretation based largely on discussions he had had with French delegates. The deliberations brought in the broad problem of rationing and control.

A general resolution was adopted to the effect that the British paper makers approve the principle of co-operation with the associated nations in the supply of paper and paper making materials. A committee was appointed to frame proposals and submit them to a general meeting of the industry.

The Paper Maker and British Paper Trade Journal, which gives an excellent account of the proceedings has some statements of peculiar interest to Canadians.

In the course of his analysis of the situation, Mr. Hall Caine said: It is obvious that the first plank in any programme of mutual co-operation between the Allied countries must start with the provisioning of raw material. If that raw material is plentiful and

the supply of it is greater than the demand, and provided there is no ring or combination or monopoly to maintain artificial prices, the natural laws of supply and demand will regulate the market, and there is little for any Inter-Allied Committee to concern itself about in the supply of raw material, but if there is a world shortage, or if the demand exceeds or is equal to the supply and if there are combinations, cartels and the formation of trusts attempted, then the position of the manufacturer is in jeopardy. If the latter is the case, it would seem to point to some sort of mutual protection upon the part of Allied consumers, and this would naturally fall to the lot of the Inter-Allied Committee to deal with.

I express no opinion; you gentlemen of the Paper Trade are in the best position to judge which of the two conditions I have outlined is apparent at the present moment. We hear conflicting stories. On the one hand we are told that there is no world shortage and will be no world shortage in the supply of wood pulp. On the other hand, we hear of difficulties that have been experienced during the war in Scandinavian countries, great difficulties in obtaining lumber, labor, chemicals, and coal. We are told that these difficulties have not disappeared with the signing of the Armistice. We are told on the best authority, that the most difficult time for the Scandinavian wood pulp trade is yet to come. And when we turn to Canada, we are told that there, too, there are difficulties in wood pulp production, and that the United States are willing to take large quantities of Canadian wood pulp, leaving but a few hundred thousand tons per annum available for export. These are the various things which you have heard, and which I have heard; we have no actual first-hand knowledge on these subjects, but if the present prices of chemical and mechanical pulps go to prove anything, they would, in some measure, bear out these assertions. Then again, it has been ascertained that the total exportable production of Scandinavian wood pulp pre-war was 2,185,000 tons. We are informed, upon high authority, that this production has now dropped to 60 per cent. of this total, some even say it has fallen as low as 50 per cent. We know that the pre-war demand for wood pulp for the Allies, leaving out the demand of the United States, was 2,000,000 tons. We can, therefore, very easily see whether the present production of the pulp-producing countries will be sufficient to meet the demands which are very shortly, we hope, to be put upon them. It is easy to say that no such demands have yet been made, and that it will be some time before the mills in this country, let alone the mills in the countries of our Allies, get back to their pre-war consumption, and to argue that, by the time we are reorganized and ready to take out pre-war quantities, the mills in the pulp-producing countries would be ready to supply us—but will this be so? Is it not our strenuous endeavor to get our men back into the mills, and get paper-making in all countries re-established on an even better than pre-war basis at the earliest possible moment? Are we to set our pace to the pace which best suits our suppliers of raw materials? It may be that we shall have to do so, but is there not danger in the whole situation? These seem to me to be important points for the consideration of the Allied Conference.

Proceeding, Mr. Hall Caine said that in dealing with this question he would like to submit to them a kind of balance sheet which he thought would show them something of the position. Prior to the war

Scandinavian production of wood pulp was 2,185,000 tons, Canada exported to countries other than the United States 400,000 tons, while the Finnish production was 128,000 tons. This gave a total of 2,700,000 tons of pulp for Europe. With regard to consumption, he put it at 2,000,000 tons for the Allies, 250,000 tons for the United States, 70,000 tons from Scandinavia for Germany, and if 250,000 tons was allowed for other countries it would give a total of 2,570,000 tons. It would thus be seen that if the Scandinavian production of pulp were to go down to 33 1-3 per cent. of what it was before the war, there was no doubt that there would not be enough to go round unless they could draw more from Canada. The United States said that they could take all that Canada could produce. The German imports of pulp wood from Russia and Finland—but principally from Russia—approximated to 1,200,000 tons. But Germany might not be able to obtain anything like that quantity from Russia in 1920, and would probably have to go to Canada or Scandinavia for pulp. It was perfectly feasible that Germany was going to be a much larger buyer of the finished article than previously, owing to the fact that it could not get the raw material for its production of pulp. At the present moment the demand of the Allies for pulp was 800,000 tons and the present Scandinavian production was about 1,400,000 tons. It seemed to him that the Scandinavians were about right when they said that their production had fallen to 50 or 60 per cent. of their pre-war total.

Apropos of the foregoing and in extenuation of a brief announcement made last week, is the following from the Financial Times of March 8:

The announcement from Ottawa this week that the Board of Trade of Great Britain will remove all restrictions upon imports of paper, including wall paper and paper-making materials, effective April 30, is expected in Canadian pulp and paper circles to stimulate Canadian exports of these products to Great Britain. Several of the manufacturers already have their special representatives on the ground looking for export business, while British houses are also sending buyers to this country to make purchases.

Canadian exports of pulp and paper to Great Britain previous to the war had never reached a very high figure. Those for the year ending March 31, 1914, totalled \$1,696,337 in value and were made up as follows:

Paper, wall	\$	200
“ felt		499
“ wrapping		1,053
“ printing		122,207
“ N. O. P.		385,993
Stationery		13,513
Pulp, chem.		5,412
Pulp, mech.		1,162,470
		<hr/>
		\$1,691,347

Published records of exports during the war years are not available, but it is known that there was a very material shrinkage.

The United Kingdom is dependent to a great extent on foreign sources for raw materials used in the paper-making industry. Very little pulp is produced locally. Two or three companies manufacture sulphite wood pulp for their own consumption, but the total thus available is comparatively trifling. Prior to the war the situation was not especially difficult, owing to the ease with which the needed materials could be obtained from other countries. For the finer grades of

paper, rags were used, as in Canada and the United States; other materials that were employed were, in order of quantity consumed, wood pulp, esparto grass, and waste, including rags and old paper, old rope, jute bags, etc.

Immediately after the restrictions were placed on the importation of paper-making materials in 1915, a more economical use of existing materials in the British Isles began and has continued on an extensive scale to the present day.

The effect of Governmental restrictions on the importation of paper-making materials is shown by the fact that while in 1913 the imports of paper-making materials into the United Kingdom totalled 1,229,150 tons, in 1917 these had fallen to 446,138 tons, and for the first six months of 1918 amounted to only 197,905 tons. While the quantity was thus reduced the value of the imports was relatively very much greater. In 1917, for example, the quantity of paper-making materials imported was only 36 per cent. of the amount imported in 1913, but the value was nearly twice as great. During the first six months of 1918 British imports of paper-making materials were reduced to an amount only 16 per cent. of the quantity imported in the complete year 1913, but the value of the imports during this period exceeded that of the 1913 imports by \$1,089,833.

In 1913, dry, unbleached chemical wood pulp was second in importance among paper-making materials imported into the United Kingdom. Sweden has for many years been the chief source of supply, with Norway, Russia and Germany furnishing about the same amount each. In 1914 and 1915 Sweden continued to ship vast quantities of this pulp to England. Sweden's prohibition of exports of pulp enabled Norway to take the lead in 1916 however and this lead has not been relinquished. The United States and Canada have also furnished a considerable amount in the past year or two. At present this class of paper-making material is being imported in larger quantities than any other, over \$19,000,000 worth having been imported into the United Kingdom during the first six months of 1918.

Mechanical Pulp.

Before the war dry mechanical pulp was the least important foreign paper material used in the British industry. During the present year it is exceeded in importance only by dry unbleached chemical and wet mechanical. Russia used to supply 80 per cent. of all imports. Sweden is practically the only source at present.

In normal times wet mechanical pulp constituted the largest item in the imports of paper stock, and until the present year it continued to rank first. Norway shipped in 1914, 1915 and 1916 an amount considerably larger than in 1913 when it furnished 75% of the total imports, and that country is still the chief source of supply. Canada and Newfoundland each contributed over 50,000 tons in 1913, and in the following three years continued to ship large quantities of this class of pulp. During the last year these shipments have been almost entirely eliminated.

It is understood that considerable quantities of Scandinavian pulp have found their way into England since the armistice was signed, probably on account of the greater accessibility of that market to the Old Country, but the information reaching Canada is that the demand is still largely in excess of the supply and Canadian manufacturers are laying plans to secure a fair proportion of the available orders.

Soda Pulp Manufacture

By E. SUTERMEISTER, S. D. Warren Co., Westbrook, Me.

(Continued from Page 246).

In Part I Mr. Sutermeister discussed the preparation and composition of the cooking liquor, the apparatus and materials employed, with illustrations; in Part II. the recovery of lime, with analyses; the principles and practice of cooking operations, with curves.

PART 3.

Mill Practices.

Passing from the experimental investigation of the different variables to the actual mill operations it is found that where poplar was originally used almost exclusively there are now a considerable number of woods employed. During 1916 the pulp wood consumed in the soda process is reported by the Forest Service as follows:

Kind of Wood.	Cords.
Spruce	630
Aspen	394,577
Yellow pine	29,727
Jack pine	61,145
Yellow poplar	37,974
Gum	37,391
Cottonwood	19,461
Basswood	11,481
Douglas fir	7,679
Sycamore	2,246
Willow	600
Buckeye	100
Cucumber	37
Beech, birch and maple	77,751
Slabs and mill waste	26,620

These woods fall naturally into two classes with regard to ease of cooking and the bleaching qualities of the fibre produced. The coniferous woods, spruce, yellow and Jack pine and Douglas fir require a rather severe cooking treatment, and the fibre bleaches with considerable difficulty; for these reasons the fibre is best employed in the unbleached condition for paper where strength is of more importance than color. The woods in the other group, known as the broad leaved woods, have many properties in common and in general cook rather more easily than the coniferous woods and yield a fibre which bleaches much more easily.

DeCew gives the following figures as representative of actual mill results in the cooking of some Canadian woods:

Wood:	Specific Gravity	Soda as cord in lbs.	Soda as Na ₂ CO ₃	Yield P.C.	Yield Lbs. air dry fibre per cd.
Black spruce: <i>Picea nigra</i>	0.41	2250	900	40	1000
Hemlock: <i>Tsuga canadensis</i>	0.42	2300	950	38	970
Poplar: <i>P. grandidentata</i>	0.43	2350	800	44	1150
Basswood: <i>Tilia americana</i>	0.425	2325	800	44	1135
Birch: <i>Betula alba</i>	0.58	3190	800	42	1490
Birch: <i>Betula lutea</i>	0.66	3630	850	40	1610
Maple: <i>Acer rubrum</i>	0.64	3520	850	40	1560

From other reliable sources the following data have been collected:

Wood.	Wt. pr cd. bone dry.	Alkali pr cd. as Na ₂ CO ₃	Yield air dry fibre pr cd.
White maple	2970	900	1520
White birch	3091—3218	1035—1120	1460—1592
Gum and poplar	3268	680	1160
Poplar	2550	760	1250
Gum	2976—3040	920—1138	1215—1432

These figures show the total amount of alkali necessary for the various woods, but mill records are often kept as the number of pounds of new alkali which are added per cord of wood cooked. This figure necessarily varies with the efficiency of the recovery plant, but from actual soda mill records of the new soda ash added and the number of cords of wood cooked it appears that with poplar 184 lbs. of soda ash per cord suffices when the recovery is 76%, or 153 lbs., with a recovery of 87.5%. For a mixture of three-fifths gum and two-fifths poplar, used during a period of six months, 157 lbs. of fresh soda ash was found to be ample when the recovery was 85.7%.

The time of cooking in the best modern mills is about four hours for deciduous, or broad leaved, woods and about six hours for coniferous woods. In order to make a success of these short cooks it is necessary to have very vigorous circulation and a rapid supply of steam. By removing air from the chips and employing superheated steam it is claimed that the liquor penetrates the chips more rapidly and that the cooking time may therefore be shortened.

Modified Processes.

Various modifications of the soda process have been proposed from time to time with the idea of improving the fibre or obtaining a greater yield. Some of these, which depend on mechanical action, have already been mentioned but others are more purely of a chemical nature. Many consist in the addition of small amounts of some material which is supposed to exert a protective influence on the fibre and prevent it from being seriously attacked; Schacht even recommends cooking with a liquor consisting largely of sodium sulphite and thiosulphate and containing only enough caustic soda to dissolve silica and aluminates. Freeman carried out the cooking in a reducing atmosphere obtained by passing hydrogen into the bottom of the

Specific Gravity	Soda as cord in lbs.	Soda as Na ₂ CO ₃	Yield P.C.	Yield Lbs. air dry fibre per cd.
0.41	2250	900	40	1000
0.42	2300	950	38	970
0.43	2350	800	44	1150
0.425	2325	800	44	1135
0.58	3190	800	42	1490
0.66	3630	850	40	1610
0.64	3520	850	40	1560

digester and out through a trap at the top until all air is expelled. Another modification consists in saturating the chips with the cooking liquor by means of pressure, drawing off the excess of liquor, and completing the cook by passing in live steam. This is claimed to give greater yield and better fibre because the chips are uniformly treated throughout.

The protective materials which it has been proposed to use are largely of a reducing nature, the idea being to prevent oxidation and consequent loss of fibre through formation of oxycellulose. The most promising of these are sulphur and black liquor. The latter is used in some mills instead of water to dilute the strong caustic to the desired strength for cooking thus obtaining a more complete utilization of the caustic remaining in the black liquor and enabling a stronger black liquor to be sent to the recovery system. As this use of black liquor is analogous to its use in the production of kraft pulp in the sulphate process it would be expected that the bleaching properties of the pulp would suffer correspondingly and this has been proved to be true in a series of careful tests in which the amount of black liquor was varied between quite wide limits. When no black liquor was used the fibre bleached with 8.4% of bleach; if 9% of the total volume was made up of black liquor the fibre required 10.1% of bleach; if 17.2% of black liquor was used 14.1% of bleach was necessary; while if the entire volume was composed of black liquor which was brought to the correct strength by the addition of solid caustic soda it was found that the fibre would not bleach to the standard color even with 22% of bleach. While black liquor injures the bleaching properties it also increases the yield of fibre, and it has been found that 3-4% more fibre, based on the weight of the wood, can be obtained if about 8% by volume of black liquor is used. Any increase in the proportion of black liquor beyond this amount has failed to increase correspondingly the yield of fibre so that 8% seems to be the limit in practical operations.

The use of sulphur in soda cooks is also a step toward the sulphate process, but the amount which it is proposed to use is only 0.1% to 0.2% on the weight of the wood which is practically nothing compared with the regular sulphate cooking liquor. It is claimed that this small amount of sulphur will not cause offensive odors, but trials extending over a number of months have proved that the odors are noticeably more disagreeable when sulphur is used. The method of using sulphur is to add it to the liquor in the causticizing tanks and allow it to dissolve during the boiling and agitation. This gives a distinct yellow color to the liquor due to the presence of sulphides or polysulphides.

Careful tests of this proposed modification have been made on a number of woods with the following results:

Kind of wood.	Percentage yield on bone dry basis	
	Without Sulphur.	With 0.2% Sulphur
Poplar	38.9	41.9
Spruce	36.8	35.7
White birch	40.9	40.9
White maple	40.6	41.4
Yellow poplar	41.7	42.6

It is evident that sulphur is not equally beneficial in all cases and that each wood must be tested separately to see whether its use would be worth while. There seems to be no doubt whatever as to its effect on the

bleaching of the fibre as in every case that from the cooks in which sulphur was used bleaches a little more easily than the corresponding fibre produced without sulphur. This property appears to be of sufficient intensity in the case of poplar wood to counteract the injurious effect of black liquor so that when both sulphur and black liquor are used in cooking poplar the gain in yield due to both factors is obtained while the fibre bleaches fully as easily as that produced with the regular, unmodified cooking liquor.

The advantages of using sulphur are not readily ascertainable when operating on a large scale because of variations in the quality of the wood and because it is not easy to determine the yield with accuracy. Such reasons are doubtless responsible for the reports from two mills that no increase in yield or other advantages could be noticed.

By-Products of Cooking.

The recovery of by-products during the cooking has been attempted at various times and is successfully carried out when treating pine or other resinous woods. The steam and gases relieved from the top of the digesters are passed through coolers and condensers and a good grade of turpentine prepared. Numerous patents have also been taken out for the recovery of rosin from woods rich in this substance, the processes consisting essentially of a partial cook with caustic soda after which the liquor removed is treated with more caustic soda, or with salt, which causes a separation of the rosin as sodium resinates. The importance of such problems is emphasized by the fact there are about 21,000,000 cords of resinous wood going to waste annually in the southern part of the United States.

With the non-resinous woods there is also a possibility of recovering useful products from the relief. When cooking poplar and condensing the relieved gases there were found in the condensate, acetone, methyl alcohol, an oily portion, and nitrogen bases, probably largely trimethylamine. Of these substances the most valuable, taking into consideration both the amount and the price obtainable are the methyl alcohol and the nitrogenous substances, and it is probable that eventually these will be recovered in most plants of any considerable size. The quantities of these materials which can be obtained from a cord of wood are not definitely known, but from small scale cooks of seven woods Bergstrom has obtained from 0.66% to 0.83% of alcohol based on the dry wood used. It is not probable that this could be duplicated on a large scale because of the tremendous volume which would have to be relieved from the digester in order to carry over all the alcohol.

(To be continued.)

LABOR AFTER THE WAR.

Those industrial concerns which still treat labor as a commodity to be bought at the cheapest possible price and to be treated accordingly are likely to find themselves saddled with the inefficient who are crowded out by the return of the soldiers. Those concerns which have already adopted a policy which presupposes that the laborer is a human being with ambitions and aspirations like other human beings, and have held forth an incentive for their employees to work intelligently to increase profits should be able to have a choice of the men whose outlook has been so greatly broadened by their experiences with the colors.—The Railway Age.

Testing Moisture in Pulp

By E. B. SLACK, Chairman Committee on Testing Moisture in Pulp, Technical Section of the C. P. & P. A.

This Committee reported that the following work has been carried out since the June meeting.

1.—Following up our report of June meeting, in which we advised the taking of strip sample from the wet lap pulp the full length of sheet, we continued our investigations, and have here tests taken showing the strip sample test obtained, and also at same time weighing balance of the lap and testing it.

This work was performed by two of the Committee, working separately, and, as will be seen, the results arrived at prove conclusively that a strip sample 3" wide, cut clean across face of roll is an absolute test of whole lap.

TABLE A.
Ordinary Wet Machine Lap Pulp.

Test No.	3" Strip % Air Dry Pulp	Whole Sheet % Air Dry Pulp	Test No.	3" Strip % Air Dry Pulp	Whole Sheet % Air Dry Pulp
1	39.85	39.25	25	42.45	45.05
2	40.65	39.20	24	40.70	40.55
3	39.05	36.70	25	36.55	38.15
4	36.70	37.05	26	41.45	41.45
5	40.25	40.55	27	41.20	42.55
6	38.85	39.80	28	42.75	42.65
7	39.20	39.15	29	43.05	43.55
8	41.05	42.05	30	42.95	42.95
9	40.20	41.15	31	42.25	41.40
10	41.95	40.60	32	41.75	42.60
11	40.15	39.90	33	41.35	41.50
12	39.30	38.75	34	40.95	40.25
13	39.40	39.80	35	40.35	40.51
14	42.15	42.65	36	38.17	36.7
15	41.05	42.30	37	38.84	38.43
16	41.05	39.55	38	35.30	38.33
17	40.80	39.55	39	40.21	36.74
18	42.70	43.25	40	38.46	38.46
19	40.65	40.50	41	37.72	37.57
20	40.85	41.40	42	41.76	39.04
21	41.65	42.25	43	36.27	36.64
22	40.40	40.55	44	31.50	30.94

Average of Strip Method 39.79 % Air Dry.
Average of Whole Sheet 39.52 % Air Dry.

TABLE B.
Rogers Wet Machine Pulp Made Into Sheets.

Test No.	3" Strip % Air Dry Pulp	Whole Sheet % Air Dry Pulp	Test No.	3" Strip % Air Dry Pulp	Whole Sheet % Air Dry Pulp
1.	46.06	46.87	31.	48.91	47.87
2.	46.10	46.72	32.	46.56	45.85
3.	48.01	46.40	33.	45.51	45.78
4.	47.50	46.20	34.	46.13	46.37
5.	45.85	45.44	35.	44.02	43.48
6.	44.65	45.95	36.	45.76	45.90
7.	45.75	46.67	37.	46.58	47.00
8.	47.05	47.20	38.	47.42	46.95
9.	45.17	45.70	39.	45.13	45.13
10.	46.64	46.80	40.	45.07	49.54
11.	47.30	46.88	41.	49.25	46.65
12.	45.90	47.96	42.	47.76	47.27
13.	44.31	45.64	43.	45.96	46.90
14.	45.69	46.18	44.	46.75	46.97
15.	46.20	47.10	45.	45.63	46.66
16.	46.52	47.02	46.	47.54	46.34
17.	46.86	47.52	47.	45.42	44.48
18.	46.36	46.91	48.	45.93	45.95
19.	47.37	46.55	49.	45.60	45.54
20.	47.05	46.97	50.	46.68	46.68
21.	46.58	46.72	51.	47.87	46.72
22.	46.61	47.50	52.	46.60	47.53
23.	46.52	46.90	53.	46.88	46.88
24.	46.16	47.05	54.	46.60	45.70
25.	43.74	43.91	55.	46.82	45.87
26.	47.88	49.15	56.	47.21	47.30
27.	47.77	47.25	57.	45.68	46.50
28.	46.11	45.92	58.	46.32	47.18
29.	48.10	46.50	59.	45.60	45.30
30.	49.20	47.00	60.	47.20	46.80

Average of Strip Method 46.38 % Air Dry.
Average of Whole Sheet 46.68 % Air Dry.

The same method was also followed in testing Wet Machine pulp made into sheets. In this instance the tests were taken from Rogers machines. Your Committee herewith submit the following series of

tests showing how the 3" strip sample also bears out in conclusive fashion the correct test for whole sheet. These tests are also shown in graphical form, chart No. 1.

Regarding Hydraulic Pressed pulp, we have made investigations regarding the wedge method, and find that it gives a closer and more accurate result than the strip method. Two different members of your Committee made investigations of the strip and wedge method as applied to Hydraulic Pressed pulp. One member of the Committee working on this sent your Chairman the following:—

"From a series of tests comparing the results by taking wedge shaped and strip samples on Hydraulic Pressed pulp, I obtained the following:—

- Wedge—54.39% Air Dry.
- Whole Lap—53.78% Air Dry.
- Strip—56.23% Air Dry.
- Whole Lap—54.11% Air Dry.

The wedge samples were cut according to the method proposed in our report of June 5th, 1918, while the strips were 2" rectangular samples cut from centre of lap to outer edge, the cut portions forming a cross in every four samples."

The other member working on the same principle obtained the following results:—

TABLE C.
Hydraulic Pressed Pulp.

Test No.	2" Strip % Air Dry Pulp	Wedge Sample % Air Dry Pulp	Whole Lap % Air Dry Pulp
1.	62.60	61.68	60.94
2.	65.00	60.20	60.75
3.	62.07	61.15	60.60
4.	62.55	61.01	60.32
5.	57.45	56.10	55.80
6.	60.80	58.20	53.20
7.	61.25	60.12	60.45
8.	61.14	59.20	59.63
9.	62.43	61.38	60.47
10.	63.15	60.17	60.03

Average of 2" Strip Method - 61.64 % Air Dry.
Average of Wedge Sample - 59.93 % Air Dry.
Average of Whole Lap - 59.74 % Air Dry.

These two members working separately, have found that the wedge system gives a much more accurate result than the strip method.

The following new investigations were made on pulp that was run over dryers and made into rolls. Your Chairman found that he was the only one on your Committee who had the opportunity to carry out investigations in this line. He thought it would be of interest to describe the method of testing pulp made into rolls:—The sheet which comes over the dryers is slit in three and wound into rolls. These rolls, when finished, are about 18" in diameter. The winder man, when cutting the sheet on the completion of the roll, cuts at the same time a strip 3" in width across face of each roll. These strips are placed in an airtight box and then tested. This gives a test for every roll that comes from the machine.

Table D. shows the air dry test of outside layer or sheet as compared with the average air dry test of 19 inner layers on the same roll, cutting the roll through to the core.

TABLE D.
Pulp Made in Rolls.

Test No.	Test of 1st. layer on Roll. % Air Dry.	Ave. of 19 other tests in same roll % Dry.	Air % Dry.
1.	79.20	78.30	
2.	71.40	75.30	
3.	79.00	78.60	
4.	80.20	80.90	
5.	70.60	75.70	
6.	81.80	80.30	
7.	72.10	71.70	
8.	67.90	68.40	
9.	73.30	71.40	
10.	67.00	67.30	
11.	65.50	66.50	
12.	71.50	72.40	
13.	68.20	66.60	
14.	69.40	69.80	
15.	67.70	68.00	
16.	66.90	67.40	
17.	67.90	67.30	
18.	72.00	71.60	
19.	75.40	76.70	
20.	72.90	73.10	
21.	74.40	74.50	

Average Test of 1st. layer on 21 rolls - 71.80 %
Average Test of 19 other tests in 21 rolls - 71.90 %

Graphical Chart No. 2 was made of 20 such individual tests taken from 5 different rolls.

When pulp made in rolls is stored, or is in transit by railroad, car, or boat, we find that a change in weight takes place. Several tests have been made of rolls after being stored for five days and ten days. These rolls were weighed every day, and afterwards they were tested, using strip method previously described. Table E. shows the result of variations in wet weight of rolls during storage of five and ten days. Table F. illustrates how the moisture content varies in the same roll after it was stored for five or ten days. This is shown on two graphical charts No. 3 and No. 4. No. 3 being rolls after five days' storage, and No. 4 being rolls after ten days' storage.

To obtain a correct test of pulp in rolls which have been stored or have been in transit, the following method of testing such rolls is recommended: —

Take a test strip 3" in width across the face of the roll from the second layer, and four other similar strips from layers located at least 1½ inches or further from the outside layer.

Table G. shows the result obtained with 29 rolls that were stored and tested in this manner.

TABLE F.
Test of Roll Pulp After Five and Ten Days' Storage.
5 Days in Storage.

Position of Test.	Roll No.4 % Air Dry Pulp	Roll No.9 % Air Dry Pulp	Roll No.14 % Air Dry Pulp	Roll No.19 % Air Dry Pulp	Roll No.20 % Air Dry Pulp
Orig. Test	62.90	68.50	59.63	78.68	91.00
Layer No.1	85.00	89.20	84.40	89.70	94.10
" " 2.	80.50	78.10	72.90	88.40	83.00
" " 3.	72.40	73.50	66.90	85.30	92.90
" " 4.	68.30	72.00	63.50	84.30	93.00
" " 5.	66.20	70.00	62.50	82.80	94.30
" " 6.	65.00	69.30	61.00	80.90	94.00
" " 7.	64.70	68.50	59.70	79.30	93.00
" " 8.	64.60	67.40	60.00	78.10	91.40
" " 9.	63.30	67.40	59.10	76.50	92.80
" " 10.	63.30	68.20	59.40	79.90	91.40
" " 11.	62.70	67.90	58.70	78.80	92.80
" " 12.	63.50	68.50	59.20	78.00	90.40
" " 13.	62.80	68.40	59.20	78.70	91.00
" " 14.	62.80	68.30	59.00	77.20	91.30
" " 15.	63.40	67.70	58.70	77.90	91.00
" " 16.	63.50	68.30	59.60	78.70	92.20
" " 17.	62.70	67.70	59.30	79.20	92.20
" " 18.	62.70	67.40	59.30	78.20	92.80
Core	67.40	69.40	60.10	86.20	97.80

10 Days in Storage.

Position of Test	Roll No.21 % Air Dry Pulp	Roll No.23 % Air Dry Pulp	Roll No.25 % Air Dry Pulp	Roll No.27 % Air Dry Pulp	Roll No.29 % Air Dry Pulp
Orig. Test	61.30	62.50	61.70	61.80	62.30
Layer No.1	86.50	96.10	90.40	84.60	92.50
" " 2.	86.70	93.30	83.70	82.80	83.30
" " 3.	72.40	85.60	80.20	78.00	79.90
" " 4.	65.70	83.10	77.80	72.50	77.40
" " 5.	67.70	77.70	73.50	71.10	73.80
" " 6.	66.10	74.00	71.40	67.10	72.00
" " 7.	65.80	70.50	67.10	66.60	70.20
" " 8.	65.50	69.50	66.20	65.20	69.50
" " 9.	64.20	67.70	66.70	64.20	67.20
" " 10.	64.50	67.10	65.90	64.30	65.50
" " 11.	62.40	64.30	63.90	61.80	63.20
" " 12.	61.80	63.30	62.90	62.30	62.30
" " 13.	61.70	62.50	61.10	61.60	62.70
" " 14.	61.20	61.80	61.90	62.70	61.80
" " 15.	61.60	62.40	61.70	61.30	62.20
" " 16.	59.80	61.80	62.70	62.00	62.30
" " 17.	61.50	62.10	61.80	61.30	62.20
" " 18.	62.10	61.90	62.00	62.40	63.10
Core	65.80	65.30	64.30	67.60	65.40

From table G it can be seen that this method gives a very close result.

Your Committee has investigated the testing of pulp run over dryers and made into bales, but so far have not obtained sufficient results for publication. Your Committee would recommend that the methods which were suggested at the June meeting as regards testing of wet pulp, whether in laps or sheets, and

TABLE E.

Roll No.	Orig. Wt. in Lbs.	WEIGHT IN LBS.										Loss in Lbs.	Loss in %.
		1st. Day	2nd.	3rd.	4th.	5th.	6th.	7th.	8th.	9th.	10th.		
1.	136	132	131	130	129	128.5						7.5	5.5
2.	133	128	127.5	127.5	127.5	126.5						6.5	4.9
3.	141	136	134.5	134	133.5	133.5						7.5	5.3
4.	172	168.5	168	167	165	165						7.0	4.0
5.	181	178	175	174	173.5	173						7.5	4.5
6.	166	163	161	160	159.5	158.5						6.5	4.4
7.	148	145	144	142.5	142.5	141.5						5.5	3.5
8.	156	153	152	151.5	150.5	150.5						7.0	4.8
9.	145	142	141	139	138.5	138						3.5	3.0
10.	156	155	155	153.5	153	152.5						7.0	4.0
11.	175	171.5	171	169	168.5	168						4.5	3.0
12.	145.5	144	143.5	141.5	141	141						5.5	3.6
13.	150	147.5	147.5	146.5	146	144.5						6.0	3.8
14.	158	156.5	157	154	153	152						4.0	3.0
15.	133	132	132	130.5	129	129						5.0	3.2
16.	134	133.5	132	131	130	130						2.0	1.4
17.	153	150.5	150	149	148	148						3.5	2.5
18.	136	135	134.5	134	134	134						1.0	0.8
19.	140	138.5	138.5	137.5	136.5	136.5						5.5	3.9
20.	112	111.5	111.5	111	111	111						7.0	4.7
21.	139	135	135	134.5	134	134	134	134	133.5	133.5	133.5	8.5	5.9
22.	148	144	143	142.5	142	142	142	142	141.5	141	141	7.0	4.4
23.	142	138	138	137.5	136.5	136.5	136	135	134	133.5	133.5	7.5	4.3
24.	157	154	153.5	153	152	151	150.5	150	150	150	150	7.0	4.4
25.	171	167	166	165.5	165	164	164	163.5	164	163.5	163.5	7.5	4.3
26.	160	156	154	153	153	152.5	153	153	153	153	153	7.0	4.3
27.	132	128	127	126	125.5	125	125	125	125	125	125	7.0	5.3
28.	142	137	136	136	136	134.5	134.5	134.5	134.5	134.5	134.5	7.5	5.2
29.	132	129.5	127	126	126	125.5	125	124	123.5	123	123	9.0	6.8

WET PULP MADE IN SHEETS

NOTE: THESE TESTS WERE MADE FROM SHEETS OFF ROGER'S WET MACHINE.

EXPLANATION

I. 3" STRIP SAMPLE

II. WHOLE LAP

III. AVERAGE TEST OF 3" STRIP SAMPLES

IV. AVERAGE TEST OF WHOLE SHEETS

% DRY

49

48

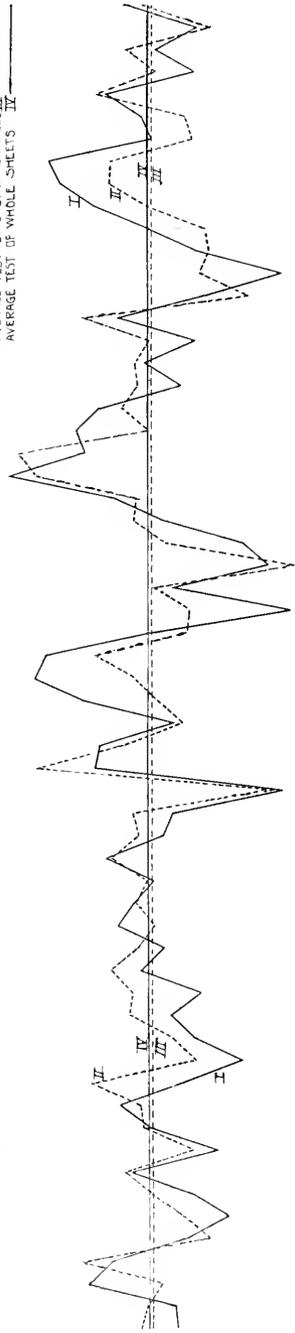
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46

45

44

43



WET PULP MADE IN LAPS

EXPLANATION

I. 3" STRIP SAMPLE

II. WHOLE LAP

III. AVERAGE TEST OF 3" STRIP SAMPLES

IV. AVERAGE TEST OF WHOLE LAPS

% DRY

43

42

41

40

39

38

37

36

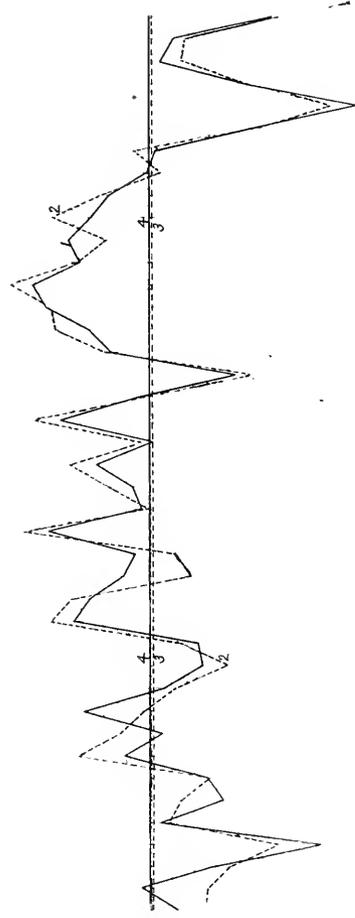


Chart No. 1.

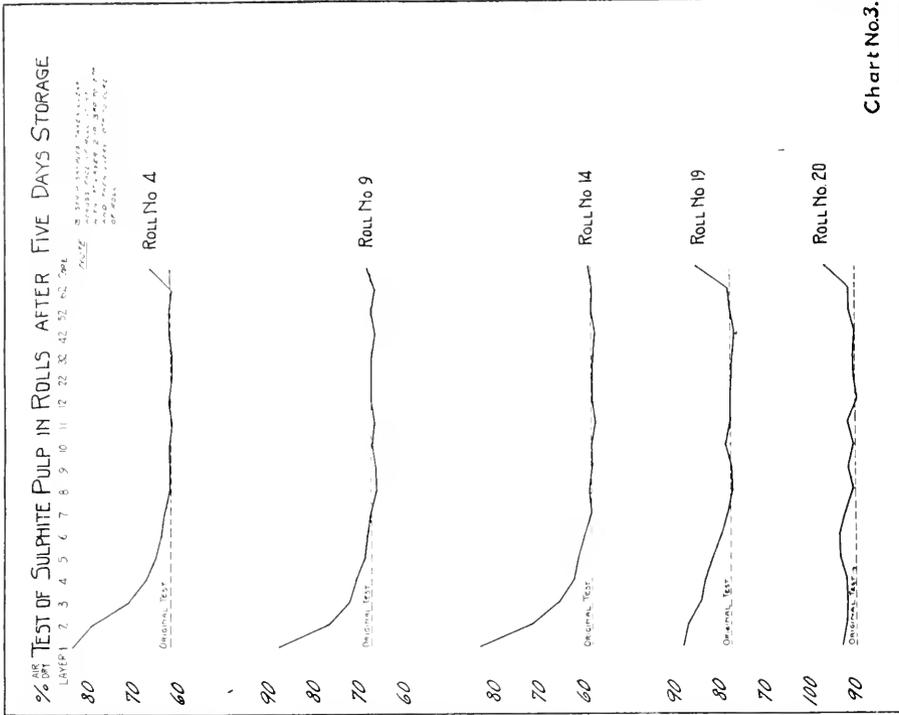
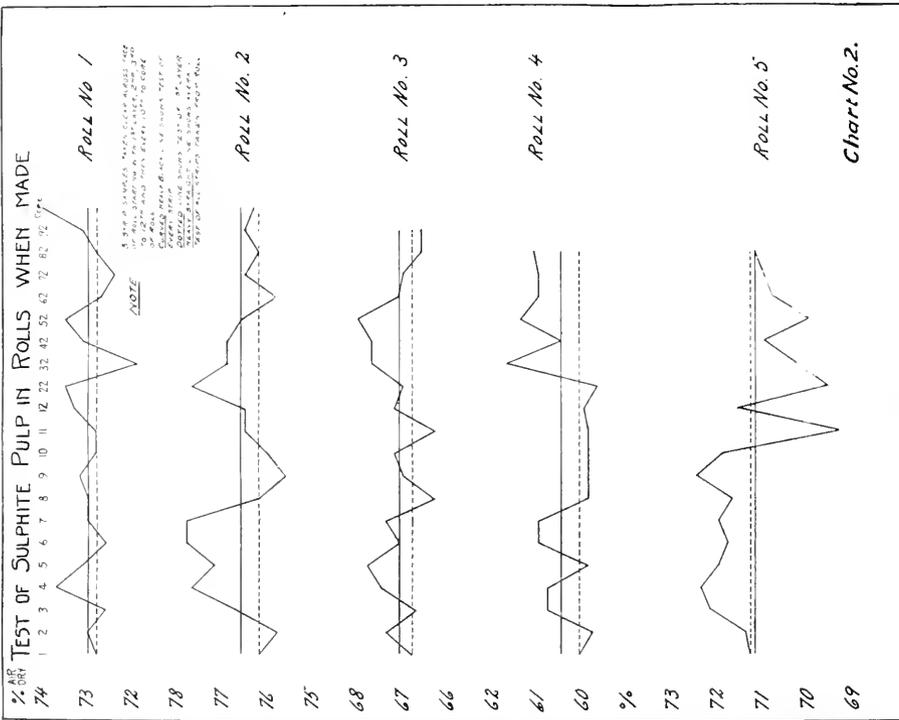


TABLE G.

Comparison of Wet Weight, Air Dry Test, and Air Dry Weight in Rolls When First Manufactured and After Storage.

No. of Roll	Orig. when made lbs.	Weight after storage lbs.	Orig. Test when made % Air Dry	Test after Storage % Air Dry	Air Dry when made lbs.	Air Dry wt. af. Stor. lbs.
1.	136.	128.5	63.70	66.90	87	86
2.	133.	126.5	65.60	67.70	87	86
3.	141.	133.5	69.00	71.90	97	96
4.	172.	165.0	62.90	66.50	108	109
5.	183.	173.0	61.40	65.50	111	113
6.	166.	158.5	62.00	65.70	103	104
7.	148.	141.5	61.50	65.20	91	92
8.	156.	150.5	63.30	65.60	99	99
9.	145.	138.0	66.50	70.20	99	97
10.	156.	152.5	66.60	68.70	104	105
11.	175.	166.0	58.30	62.10	109	104
12.	155.	141.0	67.20	76.60	98	99
13.	156.	145.5	67.30	70.00	101	101
14.	158.	152.0	59.63	61.90	94	94
15.	133.	127.0	69.78	71.10	93	92
16.	134.	130.0	74.44	76.40	100	98
17.	153.	145.0	66.70	70.00	102	103
18.	136.	134.0	81.10	82.90	110	111
19.	140.	136.5	78.68	80.30	110	109
20.	112.	111.0	91.10	91.70	102	102
21.	139.	133.5	61.30	64.20	85	86
22.	148.	141.0	62.70	66.46	93	94
23.	142.	133.5	62.50	68.30	89	91
24.	137.	130.0	62.50	65.90	98	99
25.	171.	163.5	61.70	65.80	105	107
26.	160.	153.0	64.80	66.70	104	102
27.	132.	125.0	61.80	66.00	82	82
28.	142.	134.5	64.50	69.00	92	93
29.	132.	123.0	62.30	66.40	82	82
Total - 4293½		4118.5		2828		2833

Hydraulic Pressed wet pulp, should be adopted as standard methods.

As regards pulp made into rolls, this committee should continue investigations into the different methods of testing the same, comparing the strip me-

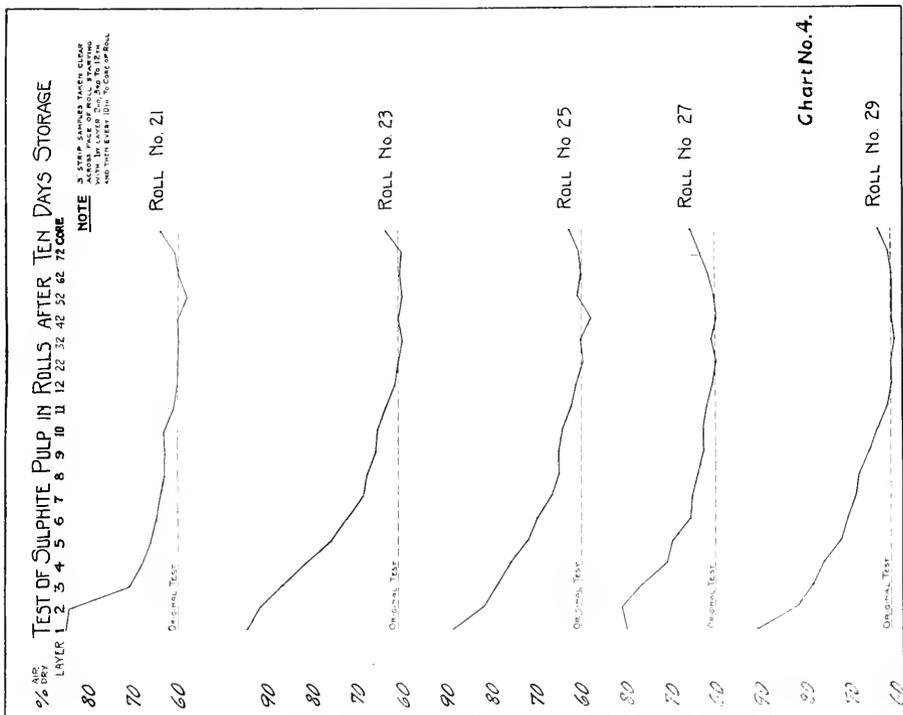
thod above recommended with other methods, so as to be able to make a definite statement as to which method should be adopted.

The Chairman, Dr. Bates, introduced the discussion, saying: I would like to have the members who have worked on this Committee for the past year, and also those of you who may be chosen for the new Committee for this coming year, receive more active co-operation of all the members of this Technical Section. We welcome criticism as regards the methods of working, and we would also like to hear from the members of the Technical Section, who have done any work in this line. I had a couple of inquiries during the past week, and it kind of heartens us to continue our work, seeing there is some interest being taken in this matter.

I think we owe a great deal to this committee for the work they have done, and for the many good results they have to show.

In answer to a question by Mr. Pounsford, it was stated that a temperature of 110°C. was used, and that the length of time depends on the weight of the sample, which is dried to constant weight.

Mr. Crossley said: "It seems to me that the tests as outlined, or the proposed methods, are methods which could be more readily carried out in a shipping mill than in the receiving paper mill, where it would in some cases be impossible." It was stated that only one member of the Committee is a paper mill man.



Mr. Staek added: "I had intended following different cars of pulp to the receiving mill, and making tests down there, but the influenza epidemic interfered. I think that should be continued this coming year."

The Chairman said: "In adopting this report, I think it is understood that we are not binding ourselves for any more action than the adoption of the report. Any definite resolution as to the actions recommended by the committee will have to be separate." In moving the adoption of the report, Mr. Stephenson suggested the advisability of getting tests and analyses down as "bone dry material," rather than basing calculations on what we estimate as air dry basis.

Mr. Stadler said: "I am not quite ready to be the seconder of the suggestion that Mr. Stephenson has made. If you take bone dry pulp, I think you should figure on the air dry basis. It would make no difference in calculating as long as it is understood what the air dry basis is to be used. You would not sell your pulp on the bone dry basis, and I think we should not aim to make those tests from a scientific point of view only. I am fully willing to second the adoption of the report as made, but I think the matter of bone dry basis is something to which we should give a little more consideration."

Mr. Mason asked: "How are the wedge samples taken? It seems difficult to obtain an accurate sample by the ordinary method if you take a piece of the wedge from the wet edge you will have to pick a proportion of wet edge. It is particularly difficult in production to get a wedge sample as accurate as the strip method."

Mr. Stadler replied: "If you have a strip sample he would have to take it so as to have proportionately the same edge—that is, the wet edge would have to be the same proportion as the whole sheet. Our mill is making all the tests on the wedge method, and one of our customers who is receiving quite a lot of pulp uses in his tests half a sheet, because he does not test so many car-loads. We are getting reports from every car, and you would be much surprised to see these come in. He takes a half sheet and we take a small wedge, and the tests come within a very small percentage of each other. There is no difficulty in using the wedge method, but the same might be true of the strip. It depends on how far you cut it. It would be a good thing if the committee on testing would put the methods of sampling on a diagram to show how the various strips and the wedges are cut."

COL. J. L. McAVITY'S NARROW ESCAPE.

Col. J. L. McAvity, of St. John, N.B., who is well known as a member of the mill supply house of that name came very near drowning last week. When taking the ice track on the Kennebecasis, about twenty-five feet from shore, the motor plunged through a side streak, about 2½ miles above Millidgeville. The Colonel managed to open the door of the sedan and rose till he struck the ice and made his way to the hole, where Sgt. Peble, Harris, his chauffeur, who managed to get out first, helped him from the water. Robert L. Johnson and E. R. von der Osten were unable to extricate themselves and drowned.

Bad mechanical wood-pulp made from decayed timber of fibres beaten dead can never yield a paper of good bulk. Neither special beating nor tending of the machine can obviate this defect.

AMERICAN METHODS IN FOREIGN TRADE.

After being told for years that Americans are either "bone-headed" or "bull-headed" in matters relating to foreign trade, it is somewhat of a relief to read George C. Vedder's book on the subject, published by McGraw-Hill Book Company, New York. Mr. Vedder is frank to admit that there are many Americans who know nothing about export business, and in some cases what they do know is not so, as an Irishman might say. It is to these business men who want to know how to get a start that the author addresses his book and in a most interesting and inspiring way he shows how to go about it. Several methods are described for getting a foreign foothold, depending on the kind of business and character of the field.

The organization of the export trade department is covered in detail, with chapters on The Export Catalog, Foreign Credits, Handling Foreign Correspondence, Banks, Tariffs, Shipping, etc. Special attention is given to German trade methods and German competition. German traders are said to have realized before the war that they were "getting in a hole," and knew that they could not compete without the unfair and often dishonest assistance of banks and the Imperial Government. German goods were usually inferior and often sold with the persuasion of a financial club. If American banks are established abroad, they should be for the service of the community and not a trade weapon for the American merchant. Quality goods, fair prices and honest and considerate methods comprise the only trade policy that will get and hold the business.

Mr. Vedder states that, except in unusual circumstances, "adapting a product to a market is ridiculously reactionary," thus upsetting the advice of George Ade and others to "give the people what they think they want." The author also says that "the nationalization of foreign trade is contrary to the dictates of common sense." Almost no one will overbuy American, English or German products because they are such. The first consideration is quality and service. He knocks the knockers of Americans and says, "We have heard altogether too much of American failures in export. It is high time we studied the successes," and his book is the result of such a study.

The Webb-Pomerene Act comes in for severe criticism. Mr. Vedder does not approve of handing out treatment to foreign customers that will not be tolerated at home. He admits it might be of some advantage to producers of raw, staple or standardized products which must meet price (rather than quality) competition. Even this does not excuse the existence of a camouflaged cartel system, which is essentially a legalized combination in restraint of trade.

Mr. Vedder has done an unusual thing. He has written a fascinating book on a business problem. It costs just one cent a page—the price is \$2.00—and it is certainly worth it.—J.N.S.

TWO HUNDRED AND SIXTY THOUSAND!

A poster recently distributed by the National Safety Council shows a group of cripples passing a street corner. A boy, watching them asks: "Who are those people pop? War sufferers?" His father replied, "No! They are a few of the 260,000 chance-takers who are seriously injured every year."

English Firm Would Serve Canadian Mills

It is the desire of the Pulp and Paper Magazine to introduce from time to time the people who are selling Canadian pulp and paper in other lands.

We have with us to-day the firm of Powell, Lane & Co., of Gloucester, Eng., which was founded seventeen years ago, by the present Chairman and Managing Director, Mr. Sidney D. Lane. The following article will tell who they are and what they do.

The company carries on a very large and successful business in the distribution of wrapping papers to the wholesale houses, and has made a special study of the individual and particular requirements of the most important industries. They are in a po-



Sidney D. Lane.

sition to act as selling agents on a commission basis, or to buy on merchant terms.

This department has been developed upon somewhat unique lines, with great energy and perseverance the special requirements of the large manufacturing industrial concerns in Great Britain requiring special kinds of paper for their commodities have been thoroughly studied; and, recognizing this, large consumers on the one hand and the paper makers on the other, have co-operated intimately with Powell, Lane & Co., Ltd., and the firm's unique knowledge has been of the greatest possible service to all concerned. It would hardly occur to the man in the street how varied and particular are the precise requirements and how wide is the range of papers that are necessary to manufacturers of various commodities for the packing, safe conveyance, distribution and preservation of their manufactures.

Take for instance a large firm manufacturing confectionery, ranging from plain chocolate bars, fancy boxes of chocolates, cocoa, etc., to fondants and gelatines, almost every one of their productions has a special predominant characteristic different from the others, and requiring special consideration in the matter of packing, etc.—the existence or non-existence of moisture, fat, or coloring matter, the necessity of protection from light, heat, damp or from

abrasure, and in the case of confectionery in fancy boxes, etc., there is the additional attention to be given to the color scheme so that the product being delicately and artistically packed in boxes or cartons is ready to attract the nicer tastes of those of the general public to whom such matters appeal.

Take again the cutlery and hardware trade—various materials require different wrapping paper for protection against rusting or other damage—for example, should a paper merchant finish a paper containing sufficient acid to attack steel that client would be lost for ever.

The cotton, woollen and soft goods industries again require special papers peculiar to themselves.

It can be quite understood that a firm who because of constant practical experience possess profound knowledge of the special requirements of the manufacturers and of the capabilities of this or that paper mill for the manufacture of any particular and specialized class of paper required by them, not only perform a valuable service to the buyer, but at the same time can give information and instructions of great value to the mill who undertake to make the special paper required.

The foregoing are only one or two instances; there are also the requirements of biscuit manufacturers, tobacco manufacturers, and manufacturers and distributors of provisions, food stuffs, etc., of all kinds. The firm's connection in Great Britain is in



Herbert Elsworth.

this respect second to none, and they cannot therefore be classed as ordinary middle men or merchants, but are specialists who, because of their knowledge, can advise both the sellers and the buyers.

Powell, Lane & Co., Ltd., endeavor as far as possible, to provide their clients with British made paper; their next endeavor, when this is not possible, is to provide their clients with Imperial papers, and in this respect Canadian paper makers would receive great assistance and advantage.

During the war, we understand that Powell Lane

& Co., Ltd., have been of great service to various Government Departments, who have required expert knowledge in regard to the supply of essential papers for manufacturers and distributors of food stuffs, both for military and civilian consumption under war conditions, and it was largely through Mr. Sidney Lane's energy and perseverance that the successful manufacture of greaseproof paper has been introduced into England during the war.

Powell, Lane & Co., Ltd., are themselves large buyers of paper for manufacture of their own specialties, these naturally consist of paper requisites for the provision trade, etc., and amongst them special interest is attached to the firm's patent "Corrugoid" paper. This interesting product is a material of paper or board corrugated in such a way that the corrugations remain rigid and intact without the aid of any lining sheet, thus the material has all the advantages of being resilient from both sides, and as no lining sheet is required it is some 33% cheaper per square yard of a given material as compared with the old form of corrugated materials.

Another important branch of the business has from the beginning been the manufacture of all kinds of paper shavings or excelsior, and in pre-war days the firm could offer no less than 400 various colors, qualities and varieties.

This firm's outlook on business seems to be very much akin with that which rules in the Western Hemisphere. Personal contact with customers is one of the most important features of their sales department, and for this reason a competent staff is maintained for the purpose of calling regularly upon buyers. This method has, of course, great advantages over exchange of correspondence, as customers' exact requirements are ascertained quickly, and also the advantages of the product of particular mills are at once explained to the buyer. This is a further aspect of the business which should be of great benefit to the Canadian paper maker. Powell, Lane & Co., Ltd., welcome correspondence and are willing to give information on any particular subject concerned with the sale of paper or boards. The firm's London address is 62-63 Queen Street.



E. C. Peterson.

GETTING READY FOR LARGER BUSINESS.

On every hand there is evidence of faith in a revival in business, and new companies and firms are being formed to participate in this larger commerce. One of the new companies recently formed is the Imperial Trading Company, with head offices at the Herald Building, Montreal.

This company intends to deal in iron, steel, copper, brass, lead, spelter and other metals; in rails, railway equipment; motors, generators, transformers, and machine shop tools; wool felt, cotton waste and other textile products; also pulp mill and mining machinery.

The company is also negotiating for a number of sole agencies for Canada, of important products from the Orient, including China, Japan, East Indies, Malay States, Ceylon, Indo-China, Straits Settlements, etc.



Major G. A. E. Bury.

The president is Major G. A. E. Bury, son of Sir George Bury. Major Bury, before joining the overseas forces, was a prominent barrister in Winnipeg. He returned to Canada recently, after over three years with the Canadian Expeditionary Force. He is a graduate of the University of Manitoba.

The Vice-President and General Manager is Mr. E. C. Peterson, formerly District Manager of the Northern Electric Company, Limited. Prior to that he was in charge of the Production Department of the Western Electric Company, Chicago, with which he began his business career in September, 1899, immediately after graduating from the Iowa State College, receiving the B.Sc. degree, both in mechanical and electrical engineering.

TROUBLE BREWING IN PAPER MILLS.

The labor unions employed in the mills have served notice on the manufacturers that they regard, for wage-adjustment purposes, the war as having ended November 11, when the armistice was signed. They are refusing to be bound any longer by agreements made through the American War Labor Board and are putting forth claims to higher wages and more favorable conditions of employment generally. A new scale to take effect early in May is in course of preparation.

Technical Section

OUTLINE FOR A TEXTBOOK ON PULP AND PAPER MANUFACTURE.

To Be Prepared for the Canadian Pulp and Paper Association and the Technical Association of the Pulp and Paper Industry.

The outline of the text books prepared for this committee, and in which changes may be made as the work develops, is as follows:

Part I.—Preliminary Instruction.

In order that the course be complete and that students be prepared to take the fullest advantage of the specific training to follow, it is most advisable that provision be made for preliminary instruction in certain elementary and fundamental subjects. While it is understood that many persons interested in the course are well versed in these subjects, there will be many who have little or no knowledge of them and others who will wish to refresh their minds. It is the intention of the committee to prepare this part of the work with a distinct flavor of the pulp and paper industry by drawing on mill and office work for illustrations, explanations and problems. New sections, such as Mechanical Drawing, Steam Fitting, Machine Shop Practice, etc., can be added later if the industry shows a demand. For the present these features are available through other channels.

A brief outline of the subjects considered sufficiently essential to be specially prepared is as follows. It is assumed that the student has a knowledge and command of the English language sufficient for intelligent reading and the answering of questions.

Section 1.—Arithmetic and Mensuration.

Section 2.—Chemistry.

Section 3.—Mechanics and Hydraulics.

Section 4.—Heat and Ventilation.

Section 5.—Electricity.

Section 6.—Safety, Sanitation and Health.

Part II.—Preparation of Pulps.

Preface. Need of a Textbook. Plan and Scope Acknowledgments.

Introductory. History. Extent of industry. Kinds of raw material.

Section I.—**Wood Production.** Importance of the forest for supply of fibre. Kinds of wood and their properties. Proper utilization and protection. Logging and driving operations.

Section II.—**Wood Preparation.** Sawing into blocks. Conveyors, Piling, Measuring, Barking, drum and knife barkers. Hand cleaning. Splitting.

Chipping, Screening, Re-chipper, Drying, Conveying, measuring and weighing. Losses, Hazards.

Section III.—**Mechanical Pulp.** Introductory. (History, etc.) Kinds of wood. Conveying blocks, Stones, Types of grinders. Special processes. Operation of grinders. Dilution of pulp. Power required. Losses. Hazards.

Section IV.—**Treatment of Pulp.** (All kinds). Screening. Refining and Riffing. Thickeners. Wet machines. Special processes. Pressing and baling. (See also chapters on bleaching and testing.) Drying machines. Export package. Loading cars and boats. Storage.

Section V.—**Sulphite Pulp.** Introduction. (History, uses, etc.) Kinds of wood. Outline of process. Layout of plant. Acid-making. (Slaking lime, sulphur

burning pyrites, coolers.) Barker system. Tower System. Analysis of acid.

The digesters, lining and valves. Filling. Cooking. Control of temperature and pressure. Testing. Mitscherlich process. Blowing. Washing. (See chapters on treatment, bleaching and testing.) Waste liquor. Condensers, Reclaimers. Circulation. Water and steam consumption. By-products. Yield, Hazards.

Section VI.—**Soda Pulp.** Introductory. (History, uses, etc.) Kinds of wood. Outline of process. Layout of plant. Causticising (Lime, soda ash, testing.) Losses, Evaporation, Recovery of lime, Recovery of soda. Dissolving. Use of black ash. Hazards.

Kinds of digesters. (Insulation instead of lining.) Filling. Cooking. Indirect heating systems. Control. Blowing. Washing. Water and steam consumption. (See treatment, etc.) Waste products. Yield.

Section VII.—**Sulphate Pulp.** Introductory. Kinds of wood. Outline of process. Liquor making. (See section VI.) Evaporators. Recovery of soda. Hazards. Cooking. Blowing. Washing. Waste products. Water and steam consumption. (See treatment, etc.)

Section VIII.—**Bleaching Pulp.** Introductory. Making liquor (from powder.) Electrolytic bleach. Testing and adjusting liquor. Bleaching systems. Time and temperature. Consumption of bleach. Bleaching of groundwood. Hazards. (Testing color, see section IX.)

Section IX.—**Analysis and testing of pulp and raw materials.** Wood, Lime, Sulphur, Soda ash, Salt cake, Bleaching powder, Sodium sulphate, Nitre cake, Making standard solutions. (Iodine, Na_2AsO_3 , etc.) Moisture in pulp. (Sampling and testing.) Color and strength.

Coal, Water, Rosin, Alum, Starch, Glue, Casein, Colors. (Using standard methods adopted by the Technical Section and Technical Association.)

Section X.—**Preparation of Rag and Other Fibres.** Introductory. Sources of rags. Classification and sorting. Cutting. Dusting. Types of boilers. Preparation of cooking liquor. Purpose and process of boiling. Dumping. Washing. Breaking. Bleaching. Draining.

Esparto, etc. Sources. How received. Cutting. Cleaning. Dusting. Cooking. Washing. (Press plate.) Bleaching. Further treatment. Straw. (Cereal, flax.) Jute, Hemp.

Part III.—Manufacture of Paper.

Section XI.—**Treatment of Waste Papers.** Introductory. Sorting. Cutting. Dusting. Cooking in boilers. Cooking in beating engines. Special de-inking processes.

Section XII.—**Beating and Mixing.** Introductory. Types of beaters. Parts of the beaters. Furnishing. Handling the roll. Temperature. Chemicals. Antichlor. Brushing out. Dumping. Care of the beater. Filling the roll. Kollergangs. Refiners. Stuff chests. Mixers. Consistency control.

Section XIII.—**Loading.** Introductory. Materials. Use. Retention.

Section XIV.—**Sizing.** Introductory. Rosin. Preparation of size. Prepared size. Effect of alum.

Preparation of alum. Adding size and alum. Other sizes—starch, sodium silicate, glue, casein, machine sizing (see Section XVII.)

Section XV. **Coloring.** Introductory. Pigments and pastes. Dyestuffs. Making the solution. When to add the color. Effect of alum and other chemicals. Fading and discoloration.

Section XVI. **Paper Making.** Introductory. Hand-made papers.

The paper machine. Introductory. Sand trap. Magnet. Screens. (Flat, rotary.) Fourdrinier part. Rolls. Flow box. Deckle. Suction boxes. Guide roll. Couch press. (Guard.) Dandy roll. Showers. Trimmer. Shake. Suction roll. Putting on wire. Sewing wire. Putting on jacket. Weight regulators.

Press part. Purpose. First press. The press rolls. Carrying rolls. Stretch rolls. Guide roll. Washer. Suction. Weights and levers. Putting on the felt. Removing the felt. Washing. Turning. Facts about felts. Felt marks. Second press. Third press. Smoothing press.

Dryer part. Purpose. Dryer parts. Steam joint. Air vent. Syphon. Dipper. Crane system. Steam regulators. Felts. Felt guiders.

Dry end. Calenders. Reels. Slitter. Winder. Taking the paper over. Automatic carrier. Troubles and hazards. Losses.

Driving gear. Constant and variable speed shafts. Marshall drive. Other drives. Rope drive. Variable speed engine. Turbines. Motors. Speed changes.

Section XVII.—**Tub Sized Papers.** Purpose. Making the size. Size press. Cutter and lay-boy. Mechanical drying. (Barber.) Dry loft—hanging, drying, pulling, jogging.

Section XVIII.—**Finishing Operations.** Conditioning. Supercalender. Sheet calender. Plater. Paster. Cutter and lay-boy. Cutters (all kinds). Counting. Trimming. Inspecting. Ruling. Paeking. Warehousing. Shipping. Handling special papers—tissue, toilet, napkins, boards, etc.

Section XIX.—**Special Fourdrinier Machines.** Harp-er machine. Edwards attachment. Rice Barton and Fales machine. Yankee, etc.

Section XX.—**Cylinder Machine.** Tubs. Molds. Wires. Presses. Felts. Dryers. Calenders. Cutters.

Section XXI.—**Special Papers and Boards.** Manufacture and use.

Section XXII.—**Paper Testing.** Mechanical microscopic, chemical.

Section XXIII.—**Laboratory Apparatus.** General arrangement. Hydrometer. Balance. Microscope. Burette. Colorimeter. Glassware (care, bending, etc.) Hot plates. Ovens. Experimental pulp and paper machinery.

Section XXIV.—**Trade Customs.** Sizes, etc. Office and Mill system. Organization.

Section XXV.—**General Mill Equipment.** Motors. Steam engines. Belts, chain drives and gears, cone and step pulleys. Clutches. Steam valves, traps and separators. Pumps, plunger, centrifugal, and vacuum. Conveyers. Elevators. Recording instruments, pressure, temperature, speed, CO₂, weight.)

APPENDIX.—Dictionary of papers and their uses. Papeteries. Articles made of paper. Tables of weights and measures. Paper sizes. Formulas for belts, etc. Charts and their use. Keeping records. Power, steam

and water requirements. List of books and journals.

Note. The order as given may have to be changed and there are doubtless many other items that should be included. The committee will not only be glad to have suggestions, but believes it is the duty of every man in the industry to help make this effort a complete success.

It is not possible to make up a list of illustrations at this time, but it is intended to have each machine and most operations shown pictorially. Full and careful illustration is recognized as an essential feature of a work of this kind.

REVIEW OF RECENT LITERATURE.

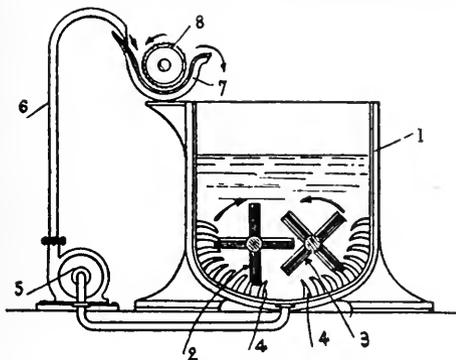
E-2. Ether manufacture in Sweden. Svensk Papperstidning, No. 22, No. 30, 1918, p. 520. Uddenholm's Aktie Bolag, Skoghall, Sweden, have commenced the erection of a plant for manufacturing of raw ether; its capacity will be 1,000 liters per 24 hrs.—G. Hg. (This company here has a sulphite mill of 1,500 tons yearly capacity. We have no advice as to whether they are recovering alcohol.—Ed.)

E-2; F-2. Method to destroy by burning the gases formed by chemical processes, especially in the cellulose industry. Papir-Journalen, No. 21, Nov. 14th, 1918, p. 162.—A Norwegian patent has been granted to Zellstoffabrik Waldhof of Mannheim-Waldhof, Germany, for a method to destroy by ignition the gases formed during the manufacturing processes in cellulose mills which, owing to their chemical nature or physical composition, are comparatively difficult to eliminate otherwise. The characteristic feature is that the gases are carried together with, or as substitute for, the primary air in the combustion chambers of gas generators, or similarly working apparatus, and burned there.—G. Hg.

K-2. Method to produce cleansing material with moisture absorbing qualities from waste paper and textile products. Papir-Journalen, No. 21, Nov. 14th, 1918, p. 162.—The firm of Reis & Co. of Friedrichsfeld, Heidelberg, Germany, have been granted a Norwegian Patent for an invention of a method to produce cleansing material with moisture absorbing qualities from waste from the paper and paper textile industry. The waste is treated with alkalies, organic or inorganic acids, with compounds of sulphurous or similar acids insoluble in water.—G. Hg.

K-6. Apparatus for re-pulping waste paper. Tidsskrift for Papirindustri, No. 22, Nov. 15th, 1918.—Bertrand Navarre, Lyons, France, describes his method thus: The sketch shows a section of the apparatus in which the first operation of the process is made. The paper is disintegrated in a water bath and afterwards the ink is removed from the pulp. In processes heretofore in use the pulp was disintegrated, more or less moistened, but not thoroughly wet. The moisture causes the ink to spread all through the pulp and to adhere to the fibres in such a way that not even the most thorough washing could remove it afterwards. The invention is based upon the fact, which has been proved by experiments, that if old writing or printing paper is disintegrated in a waterbath, a washing done as mentioned below, will remove every trace of printing or writing ink from the pulp. The paper is brought into the trough, which is filled with an appropriate quantity of water, preferably hot. In the bottom of the trough are two agitators, 2 and 3, the shafts of which can be either horizontal or vertical. These agitators are provided

with blades placed at an angle of 45 degrees and in such a way that they catch between each other when revolving. The paper in the trough will pass through the combined action of the water and of the agitators 2 and 3, over knives or teeth placed in the bottom and on the sides of the trough, and thus will become defibred. A centrifugal pump, 5 (there could also be used an elevator of suitable type) takes the pulp from the bottom of the trough as soon as it is properly disintegrated and delivers it through the pipe 6 into the trough 7, where a cylinder 8 is revolving. The bottom of trough 7 as well as the face of cylinder 8, have narrow strips running lengthwise. The pulp is between the bottom of the trough and the cylinder, and is further defibred. The pulp now obtained is necessarily gray in color owing to the presence of ink, etc. Until now the best way of loosening the ink from the fibres has been by washing the pulp with soap. The washing called for in this invention is done without the aid of chemicals. Its principal feature is that the pulp is passed through the screen, which is placed in



a suitable angle. The water passes through the screen, while the fibres remain. When more water is added the pulp will move a little towards the lower part of the screen. Repeated washings will bring the pulp down to the lowest part of the screen and the pulp will be entirely free from ink.—G. Hg.

K-10. Methods of sizing paper and boards. Tidskrift Papperindustri, No. 22, Nov. 15th, 1918, p. 344.—Zellkoll G.m.b.H. of Berlin, Germany, D.R.P. No. 306688. By this method animal sizing can be used directly in the machine without addition of rosin sizing provided the animal sizing is added to the fibres in gelatinous form. If required, the sizing can, by adding some hardening material, be given a melting point that corresponds to the drying temperature as well as to the use of the finished product. Following is an example of the method as applied to a strongly sized board: A quantity of sizing corresponding to 10% of the weight of the solution by heating and is given, through addition of formaline, chromalum or other hardening materials, a melting point below the drying temperature. The mixture is allowed to settle and get stiff, and in this shape it is added to the pulp in the beater or kollerzang. Here the gelatinous sizing is mechanically distributed and thoroughly mixed with the fibres. The work on the paper or board machine goes on in the customary way. The moist boards, after leaving the presses, go into the drying room, and here the sizing melts and

stieks the fibres together to a body so solid that after drying the various layers the boards cannot be separated from each other. By exposing the nearly dry or re-moistened boards to formalin gases or by bringing in some other suitable way, the sizing into insoluble form, one can by proper choice of fibres obtain an excellent substitute for sole leather. The use of this method is not confined to the example above mentioned.—G. Hg.

L-5. Artificial silk from Swedish cellulose. Svensk Papperstidning, No. 22, Nov. 30th, 1918, p. 520. A company has been founded in Boras, in Sweden, with a capital of Kr. 1,400,000, and with the purpose of industrially and commercially exploiting the viscose and other methods for refining and improving cellulose.—G. Hg.

L-7. Cello yarn.—the latest cellulose yarn. Svensk Papperstidning, No. 22, Nov. 30th, 1918, p. 523. The latest German invention is "Cello-yarn." This is considered equal to "Stapelfaser," without being identical with it. It is flexible, strong and washable. The methods of manufacture have been worked out by Adolf Kube Co, G.m.b.H. of Dresden.—G. Hg.

R-1. Production of pulp in Japanese Saghalien. Svensk Papperstidning, No. 22, Nov. 30th, 1918, p. 523.—Swedish Consulate General in London, Eng., reports to the Board of Trade Journal, that the manufacture of pulp in Karafuto (Japanese Saghalien) is constantly growing. The yearly production is expected shortly to be 100,000 tons. The lumber limits are extensive. Two new companies have recently been founded. The value of the production at present is 2,000,000 yen. It is considered that the Japanese paper mills will be very soon altogether independent of the import of foreign pulp.—G. Hg.

R-1. Italian Government's own paper mill. Svensk Papperstidning, No. 22, Nov. 30th, 1918, p. 523.—The minister of Industry in Italy has proposed that the Government build its own paper mill for manufacturing paper required for official purposes.—G. Hg.

R-1. New cellulose mill in Poland. Papir-Journalen, No. 21, Nov. 14th, 1918, p. 160.—The erection of a sulphite mill is contemplated in Poland. The product would be used as raw material for paper yarn for the textile industry. The necessary capital is provided, also wood and labor are available.—G. Hg.

R-2. Tycho Brahe as a paper maker, by P. J. Svensk Papperstidning, No. 22, Nov. 30th, 1918, p. 517-519.—Tycho Brahe, a Swedish astronomer of world wide fame, who died 1601, was a pioneer not only in his special science, but also in several useful industries. Among other enterprises he started a paper mill on the little island of Iiven in Oresund, where he had his castle Uranienborg. He also operated a mill in Klippan, Sweden, and this latter is still one of the most important in the manufacture of high grade papers in Sweden.—G. Hg.

R-5. The German paper market. (Der Papier-Fabrikant, Nov. 15th, 1918). Farmand, No. 48, Nov. 20th, 1918, p. 1070. The political situation has brought with it large orders for the paper makers, as consumers are anxious to secure stock, fearing irregularity in the production for the immediate future. There are large demands for all kinds of papers, especially however, groundwood papers for printing purposes. The elections will demand large quantities of this kind of paper. The question of prices has become a secondary one.—G. Hg.

PULP AND PAPER NEWS



William Andrew Eakes, of Port Mellon, B.C., has applied for a writ of attachment under the Woodman's Lien Act on a scowload of paper owned by the Rainy River Pulp and Paper Co., in the Supreme Court Registry of Vancouver. He claims, on behalf of himself and six others, that wages aggregating \$1,042.25 are owing him. The scowload of paper is at Burrard Inlet.

The Farmers' Publishing Co., which, for some time, have been talking of publishing a daily paper in the interest of that body for general circulation in Ontario, have purchased the Weekly Sun, Toronto, which was founded in 1891 by George Wrigley, and for years was the official organ of the Patrons of Industry. In 1896 it was bought by a joint stock company, which has owned it ever since. The Farmers' Publishing Co., the new owners, intend in time to develop it into a daily publication.

McClelland & Stewart, Limited, publishers, of Toronto, have, owing to expanding business, removed their offices, sample rooms and warehouse to 215 Victoria St., Toronto, where two large flats are occupied. They have also taken over the Canadian business of Cassell & Co., of London, Eng., whose publications will be carried in stock.

The Toronto News has changed hands, a new company strongly financed, assuming control of the paper, which will be greatly improved. C. W. McDiarmid will continue as general manager of the News.

Hon. Frank Carrel, who is the proprietor of the Quebec Telegraph, and a member of the Legislative Council of the Province of Quebec, has been appointed a member of the Board of Directors of Canada Steamship Lines, Limited.

The Legislative Press Gallery, of Toronto, have elected Sir Adam Beck as Hon. President; Geo. A. Martin, of the Toronto Globe, President; C. H. Gibbons, of the Toronto News, Vice-President; W. O'Neal, of the Toronto Star, Secretary.

Charles Gordon-Smith, for over twenty years identified with the Montreal Herald as city editor, and one of the best known journalists of Quebec province, has resigned from that paper, owing to the recent change in proprietorship. When J. S. Brierley sold his interest in the Herald several years ago to D. Lorne McGibbon, of Montreal, he was to receive, as superintendent of the job printing department, \$10,000 a year for ten years. When the Herald went into liquidation a few weeks ago, Mr. Brierley sued Mr. McGibbon for arrears to the extent of \$63,957.39. As the payment had been guaranteed by Lord Atholstan, the latter was sued in warranty. The suit has been settled for \$40,000, and Judge Bruneau, of Montreal, has authorized the liquidator of the Herald to compromise the claim.

At the annual meeting of Gunned Papers, Limited, Brampton, Ont., a very satisfactory report was presented, and the following officers elected for the

coming year: President, Capt. R. R. Barber; Vice-President, E. R. Colbert, and Sec.-Treas., W. J. Hood. Considerable new equipment was installed during the year. Dextrine Products also reported good business, with excellent prospects for 1919. Capt. R. R. Barber was elected President; W. J. Hood, Vice-President; E. R. Colbert, Sec.-Treas., and E. W. Unsworth, mill superintendent.

N. A. Grainger, chief forester for British Columbia, is investigating the possibilities of patrolling the timber sections of that province by air, and is asking for an estimated cost.

B. P. Brockbank, formerly a well known journalist in Hamilton, Ont., has been chosen as secretary of the Central Branch of the Great War Veterans' Association, Toronto, and has entered upon his new position.

In the charter, which has been granted to the National Paper Goods, Limited, of Hamilton, the company is empowered to take over the good-will and business of the National Paper Goods Co., Limited. The capital stock is \$300,000, and the company is authorized to manufacture, buy, sell and deal in all kinds of paper, envelopes, tape, twine, board, paper, boxes, shipping cases, mailing tubes, etc.

The new Port Alice plant of the Whalan Pulp & Paper Co., Vancouver, is receiving its finishing touches, and will be manufacturing from this out 70 tons daily of sulphite fibre, being the only mill of its kind on Vancouver Island. The buildings are laid out to produce, when the market develops, about 120 tons daily. It is expected that 800 men will be required for the various operations, including logging and saw milling.

Rev. Dr. Briggs, steward of the Methodist Book and Publishing House, Toronto, has been confined to his home for a few days with bronchial trouble, but is improving, and expects to be around soon.

A wad of paper in his peak cap saved the skull of a seventeen-year-old boy named Arthur Bullin, from being fractured when he was attacked by two highwaymen, who struck him with an iron bar and a hammer. Bullin, who is a driver for a King street grocer, Toronto, had considerable money on him at the time. His calls scared the thugs away, and the lad owes his life to a wad of paper.

There has been a decided slump in the price of waste paper. Dealers in Toronto, owing to the dull market, are now paying only 20 cents per hundred pounds in bales, ton lots, and ten cents for waste in bags, while the ordinary store keeper has to be content with having his refuse carried away gratis. Some of the Canadian board mills are only running part time, and buying has ebbed considerably.

Ralph King, of Toronto, Vice-President of the Hinde and Dauch Paper Co., Limited, of Canada, and Mrs. King, have gone on an extended visit to Florida.



CANADIAN MARKETS.

Toronto, March 10.—The improvement in general trade conditions so far as the pulp and paper industry is concerned continues and as the weeks pass and spring opens up, the tone of business is getting better. Exports to other countries continue to grow and advices received by the Department of Trade and Commerce at Ottawa evidence the demand that there is abroad for all kinds of Canadian paper. Jobbers report that deliveries are very good and they expect that the mills will this year be in a position to give them all the goods that they require. Many concerns were disappointed last season owing to delayed and, in some instances non-deliveries, and the result was disappointment and dissatisfaction all around. Customers were insistent and possessed of a mad desire to stock up and did not take into account the shortage of labor and other difficulties. Each man acted as if his were the only business being placed and he could not understand why so many people wanted exactly the same merchandise as he did. However, everything is now running smoothly at the mills. Shipping is good and coal is plentiful and there is abundance of water and deliveries can be promptly effected.

Prices remain firm and while the cost of production is so high, there can be no perceptible decrease in the figure for the finished product. True, there may be some declines in values later on in the summer, but that is another story. Many representatives of American mills have been in Canada lately seeking business owing to the quiet state of affairs which prevails in the industry on the other side. In most cases wholesalers and large buyers have been loyal to Canadian firms. They do not forget that domestic manufacturers took care of their wants a year ago even at a big sacrifice when they were offered fabulous prices for their product abroad. The Canadian mills refused to look at these tempting offers and patriotically stood by the home market. Now, not a few Canadian plants are able, by reason of improved facilities and more help to take on some export orders and are devoting their attention in that direction; but they assure patrons that no local interest will suffer. Reserve supplies in the hands of consumers are being depleted and buying increases accordingly.

Some sulphite plants and sulphate mills have slowed

down in production until the demand gets better and export orders come in in larger volume. They do not wish to pile too much of their product but will diminish output rather than cut prices. The big mills are pretty well bought up and are diffident about taking chances on the future as they are not sure that the price of paper will keep up to where it is now for the next six months. They do not wish to assume too heavy a responsibility during the period of reconstruction. Until conditions become normal they prefer to adopt a policy of watchful waiting.

The outlook for groundwood is regarded as more favorable. There has been very little snow in Maine and the other eastern states and as a result there is liability of low water in the spring which may cause a number of grinders to close down. This would greatly strengthen the market.

Canadian firms have been advised that there is a good demand for all grades of paper in Japan. In the number of inquiries received by the Commercial Intelligence Branch of the Department of Trade and Commerce from week to week at Ottawa, wood pulp plays a prominent part. Many foreign houses are asking for connections and information. Among the kinds of paper that are desired abroad, are book, bonds, kraft, vegetable parchment, onion skins, etc., as well as coated stock. There is also reported to be a good demand for soda ash and caustic soda from Japan where many new large concerns, which use large quantities of these materials in the process of manufacture, have lately been established.

Not only will Great Britain be a large purchaser of Canadian pulp as soon as ocean tonnage can be arranged, but France will also afford a profitable market. It is estimated that the quantity which France will find it necessary to import each year will be about 200,000 tons of dry mechanical pulp and 250,000 tons of chemical pulp. (See article on another page.) Another indication that the pulp and paper industry of Canada has a bright future ahead is the activity in the stock quotations of the listed securities and the rapidity with which a recent bond issue was taken up.

Book and writing mills are producing moderate amounts of paper for export and now that the investigation has been called off, manufacturers are free from harrowing restrictions and will be enabled to de-

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES ²⁰⁷⁴ ₂₀₇₅ MURRAY HILL, NEW YORK

We are always in the market
and ready to pay good prices
for

SULPHITES

Bleached and Unbleached of
Canadian manufacture.
Write and let us show you
what we can do.

vote all their energies to production and markets. If the newsprint manufacturers are successful in their desire to have the restrictions on their product lifted by the beginning of next month, it is felt that many concerns will go ahead and increase their capacity. Coated paper plants are busy; many houses are issuing catalogues and business firms are having more literature printed than they have for many years back. They are all getting into the market for the big business that it is felt is bound to come in every line. Travelers find that confidence is reasserting itself and orders, which have been hung up, are now being placed. There is very little over-production in any line of goods and with the resumption of building operations, paper mills making sheathing paper expect that the present season will be the best one since the war period.

NOTICE TO IMPORTERS AND REPRESENTATIVES OF BRITISH FIRMS IN CANADA.

The Senior British Trade Commissioner in Canada and Newfoundland (Mr. G. T. Milne, 367 Beaver Hall Square, Montreal), has been notified by the Imperial Department of Overseas Trade in London that he is empowered to appoint an expert to examine and report upon consignments of goods from the United Kingdom, in respect of which a dispute has arisen, and to certify the signature of such experts as authentic. The Commissioner will, however, only intervene when requested to do so by both parties to the dispute.

The kind of disputes in which the Commissioner may intervene are those regarding goods which are alleged to be not up to sample, or which have arrived in a damaged condition owing to faulty packing. The Commissioner is not authorized to deal with claims under insurance policies for goods damaged during the voyage.

As the official Trade Representative in Canada and Newfoundland of the Indian Government, the Commissioner is also authorized to act in regard to disputes relative to shipments from India.

The remuneration of experts appointed by the Commissioner is a matter for the parties to the dispute. No fee will be charged for his services.

The British Trade Commissioner at Toronto (Mr. F. W. Field, 257 Confederation Life Bldg., Toronto), is empowered to act in disputes arising out of shipments to Toronto and to other centres in Ontario.

REGULATING BOX FOR PAPER MACHINE.

"Makin' Paper" prints an illustrated description of an improved "stuff box," invented by D. A. Dillman, an employee of the Crown-Willamette Paper Co., but who perfected his apparatus while working for the Powell River Company. The U. S. Patent number is 1,166,042. It has the usual three compartments, but arranged as three quarters of a square. Numbered, in order, 1, 2 and 3, the stuff would enter 2, overflow a dam into 3, and back to the chest, and flow through on an adjustable gate into 1, and thence to the machine. Compartments 1 and 3 are connected by a channel across the fourth corner of the square, and an adjustable gate automatically controls the inlet from 1 to the channel. If stock gets too high in 2 it tends to force too much into 1. In such a case a float is raised in 2, and through a lever opens the gate 1 and lets such excess out into 3 and back to the chest.

THE BOOK PAPER MARKET FOR JANUARY, 1919.

Weekly reports to the Federal Trade Commission from 45 book paper manufacturers operating 77 mills for the month of January, 1919, show that mill stocks of both periodical and total book paper increased during the period.

Reports of 201 machines show the following loss of time during the month, representing an average of about 700 hours per week for repairs, about 2,000 for lack of orders, and about 700 for other reasons, principally lack of labor, partly lack of stock.

The above figures include machines running partial time on other grades than book paper. The total loss of time from all causes increased about 5 per cent over the preceding 5-weeks' period.

Imports of book paper are almost negligible, being only 10 tons for December, 1918, and 34 tons for December, 1917. Exports of book paper were 6,225 tons for December, 1918, as compared with 4,434 tons for December, 1917. Exports of book paper for December, 1918, were principally to Australia, Japan, Argentina, Brazil, and Cuba. Exports of book paper to other countries for 1918 include 684 tons to China, 593 tons to British India, and 415 tons to British South Africa.

The principal imports of chemical wood pulp consist of unbleached sulphite and sulphate from Canada. More than 81 per cent of the chemical wood pulp imported in December, 1918, came from Canada. Imports from Norway and Sweden were 5,078 net tons. The total imports of chemical wood pulp were 11,829 tons greater than in December, 1917.

Imports and exports of paper stock other than wood pulp include rags and vegetable fibers. Imports for December, 1918, were 2,569 tons, as compared with 1,385 tons for December, 1917. Exports were 920 tons as compared with 1,562 tons for December, 1917.

Stocks of the publishers of periodicals and magazines increased 1,562 tons during the month. The stocks of book publishers increased only 30 tons, and those of printers declined 486 tons. Total stocks showed an increase of 1,106 tons.

Thirty-four concerns held more than 72% of the total stock reported by the publishers of periodicals and magazines at the end of January, 1919.

A total of 81 contracts for Machine Finish, Super-calendered and Coated paper was made during January, 1919. The range of prices, and the tonnage were as follows:—

Kind.	Aggregate Tonnage.	Price per 100 lbs. including Discount.
Machine Finish	20,192	\$6.50—\$7.75
Super-calendered	11,614	6.75—8.50
Coated	1,530	9.25—9.50

Total (81 contracts) 33,336

It is important to note that the variation in prices of different grades of book paper is due to considerable extent to differences in quality and the quantity contracted for and to methods of packing.

Of the 81 contracts above, some include more than one grade of paper, and rolls as well as sheets.

Prices quoted on book paper by jobbers were slightly higher in January, 1919, than in December, 1918.

About 51 per cent of the current deliveries of unbleached sulphite ranged from \$85 to \$95 per ton. The bulk of the remainder ranged higher in price.

WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

501 Fifth Avenue, Astor Trust Building
Cor. of 42nd Street
NEW YORK CITY

About 63 per cent of the contract deliveries ranged from \$90 to \$100 per ton.

Excluding one item of almost 2,000 tons at \$88 per ton, about 67 per cent of the current deliveries of bleached sulphite ranged from \$110 to \$120 per ton. The remainder of current deliveries was at various prices depending upon the quality. About 74 per cent of the contract deliveries of bleached sulphite ranged from \$100 to \$120 per ton.

About 63 per cent of the current soda pulp receipts ranged from \$75 to \$85 per ton and the remainder at from \$90 to \$100. More than 82 per cent of the contract deliveries of soda pulp ranged from \$85 to \$95 per ton.

DOMINION PRINTING BUREAU WASTEFUL.

The report of the Government's Special Committee on the Dominion Printing Bureau at Ottawa was tabled in the House of Commons last week, surpassed any other item of interest in the Ottawa paper and printing field within that period. The report, while not so much of direct interest to newsprint manufacturers or newspaper publishers, has caused much comment in paper using houses and printing plants. Besides paper salesmen and paper selling houses and agencies are directly interested, as the Dominion Printing Bureau was one, if not the largest, of the paper consuming printing plants in Canada.

A very brief summary of what is contained in the report is as follows:

Investigating committee composed of Adam L. Lewis, Southam Press; Eugene Tarte, La Patrie Publishing Co., Montreal; and E. F. Slaek, of the Gazette Printing Company, Montreal, finds:

- 1st—Commercial inefficiency "shocking."
- 2nd—Labor employed in Bureau inefficient.
- 3rd—Proof reading staff overmanned, and could be reduced by sixty per cent, saving in wages \$40,000 per year.
- 4th—Conditions in typesetting department "pitiable."
- 5th—In some departments three men are employed to do the work of two.
- 6th—Some of the printing costs fifty per cent more than it should.
- 7th—Conditions in bindery department "preposterous."
- 8th—Political selection of help cause of inefficiency and lack of discipline.
- 9th—Charwomen and caretakers costing \$31,000 per year.
- 10th—Proof reading department a dumping ground

for those who could not otherwise be placed.

11th—Editorial Board has done good work, but its activities have been fettered by present system.

12th—Mechanical staff is paid a higher scale than is obtained for the same work in Montreal and Toronto.

The blame for the above mentioned conditions is placed by the report on political patronage. The report says: "We unqualifiedly place the blame for the existing conditions in the Bureau upon the failure of those to whom the King's Printer has been responsible to uphold his authority under the law, thereby undermining the discipline absolutely essential to the successful management of the Bureau. This condition is practically as old as the Bureau. Recommendations for improving conditions are made."

F. T. C. GIVES FIGURES ON PULP PRODUCTION.

Comparing the stocks on hand at the domestic pulp mills at the end of January with their production, the figures indicate that:

Groundwood mill stocks equal about 4½ weeks' output.

News grade sulphite mill stocks equal about 8 days' output.

Bleached sulphite mill stocks equal about 5 days' output.

Easy bleaching sulphite mill stocks equal about 11 days' output.

Mitscherlick sulphite mill stocks equal about 7 days' output.

Sulphate mill stocks equal slightly more than 4½ days' output.

Soda pulp mill stocks equal about 3½ days output.

The number of grinders and digesters showing lost time during the month of January in operating mills was 1,122. These figures do not include the machines in 10 mills that were not in operation at all during January, chiefly on account of lack of orders, repairs, lack of material, and lack of power.

U. S. NEWSPRINT PRICE STANDS.

The Federal Trade Commission has definitely refused the request of publishers to re-open the question of newsprint prices from May 1 to July 31, 1918. Consequently the only recourse left in this direction is an appeal to the judges of the Circuit Court of Appeals. The commission is still considering the question of newsprint prices from August 1, 1918, to date, but no decision is expected on this matter for at least two weeks.

NORDLING, MACÉ & CO.,

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UNITED STATES NOTES.

Though there has been a decided improvement in certain sections of the country recently, conditions in the paper industry generally are still far from satisfactory. Unemployment continues in many branches and whatever betterment there may have been in some localities, no appreciable change in the general situation is looked for in the immediate future. Though there has been no material decline in price. The demand from mills for paper stock continues weak. Orders have generally been for immediate delivery and for small quantities. Once the jobbers find that they must stock up, there is no doubt that the mills will be overwhelmed with orders. A drop in prices would help considerably in bringing about improved conditions generally, but there is little likelihood of any decrease in prices considering the high cost of everything that enters in to the manufacture of paper.

The discrepancy in freight rates that now exists in favor of New England paper mills and establishments on eastern trunk line points has been declared discriminatory in a report made by the Interstate Commerce Commission which has been investigating the matter. Kalamazoo Valley and mid-Western paper manufacturers generally feel gratified over the probability that the Commission will order a readjustment. The railroads and the paper mill people in the Valley district are to be given an opportunity to file affidavits with the commission during the ninety day period that the case is to be held open.

A letter sent last week to owners of the union paper mills of the country by J. T. Carey, president of the International Brotherhood of Paper Makers, suggests a conference of union representatives and owners to be held at the Belmont Hotel in New York, beginning Tuesday, March 18, for the purpose of discussing a new agreement sought for the union paper makers. Fourteen points to be considered at the conference are outlined in Mr. Carey's letter. Following are just a few of the features mentioned. Wages are to be advanced 15 per cent.; pay is to be for 50 week's work during the year; double time is asked for Sunday work and time and a half for overtime during the week; five holidays are designed for 36 hour lay-offs. Christmas to be observed for 42 hours, with full pay for these holiday vacations; and in cases where mills are closed and the men not notified, all those reporting for work shall receive four hours pay. It goes without saying that the main requirements of the union leaders do not meet with approval by the manufacturers.

A remarkable showing for the year 1918 has been made by the American Writing Paper Company. At the recent annual meeting of the stockholders at Jersey City, New Jersey, President George A. Galliver informed the holders of stock who were present at the session that he expected a surplus of \$1,252,269, which is at the rate of \$10.02 a share on the \$12,500,000 preferred stock. This compares with a surplus of \$150,287, or \$1.20 a share on the preferred stock earned in 1917. This showing was reflected on the stock market where, during a ten day period the company's preferred stock rose from 28 to 38.

The plant of the Cliff Paper Company at Niagara Falls, N. Y., which has been closed since February 2, 1918, by the government power ban, is to resume operations on April 1st instead of May 1st, as originally planned. The mill will begin with a full quota of 120 men. The supply of material on hand is ample, and orders are enough to keep the mill running full time. Though the power restriction was raised the first of

January, this year, the Cliff Company decided to defer a resumption of operations until general conditions held out some promise of improvement.

C. B. Hewitt & Bros., Inc., one of the pioneer paper firms in New York City, are to give up in the near future their place at 48 Beekman Street and consolidate their office with the warehouse at 16 to 24 Ferry Street. The premises on Beekman Street have been occupied by the firm ever since its incorporation in 1868.

The National Association of Waste Material Dealers are to meet this year at the Hotel Astor, New York City, on March 18 and 19. The sixth annual banquet of the association is to be held at 7 in the evening of March 19. Meetings of the Paper Stock and Waste Paper Divisions will be held during the morning of the 18th.

International Paper Company earnings this year are expected to show between \$15 and \$25 per share. Accumulated earnings of the past three years are approximately \$75 a share of common stock, though the market price is only \$47.

The Great Eastern Paper Company, Inc., of New York, has increased its capital stock from \$10,000 to \$30,000.

INTIMATES INFRINGEMENT OF PATENTS.

Some readers of the Pulp and Paper Magazine will be interested in the following letter to the editor from Fibre Making Processes, Inc., (formerly American Barking Drum Co.), Chicago:

"We are informed that a Canadian company is marketing drums patterned closely after ours, and we shall not hesitate to bring suit against any user of a drum infringing our Canadian patents, which are as follows:

No.	Inventor.	Title.	Date.
167,103	Berger & Guettler	Wood Barking Machine	1-18-1916
170,808	Guettler	Barking Apparatus	7-18-1916
171,244	Guettler	Slab Barker	8- 8-1916
184,026	Guettler	Method of Barking Slabs	4-30-1918
185,231	Guettler	Barking Apparatus	7- 2-1918

We also have other patents pending.

Yours very truly,
FIBRE MAKING PROCESSES, INC.
 By H. W. GUETTLER, Pres.

NEW JEFFREY CATALOGS.

We have just received a copy of Catalog No. 210 on the Jeffrey Improved Carrier, showing the latest type of Pivoted Bucket Conveyor for the handling of coal, ashes, clinker, etc.

The new catalog contains 96 pages, and presents clearly illustrated details of the carrier, many interesting exterior and interior views of large power plant equipments and also reproductions in color of dimensioned blue prints of typical views for the various sizes of carrier equipment, which will be of especial interest to the architect and engineer, as it enables them to incorporate the Jeffrey Carrier into their building plans before placing their order for the equipment. Copies can be had on application.

Catalog No. 244 describes the Jeffrey Standard Bucket Elevator and shows typical installations, with dimensions, capacities, etc., as applied to various industrial problems.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

Subscription to any address in Canada, United States and British Empire, \$5.00 yearly. Other Countries Postage Extra. Single copies, 15 cents.

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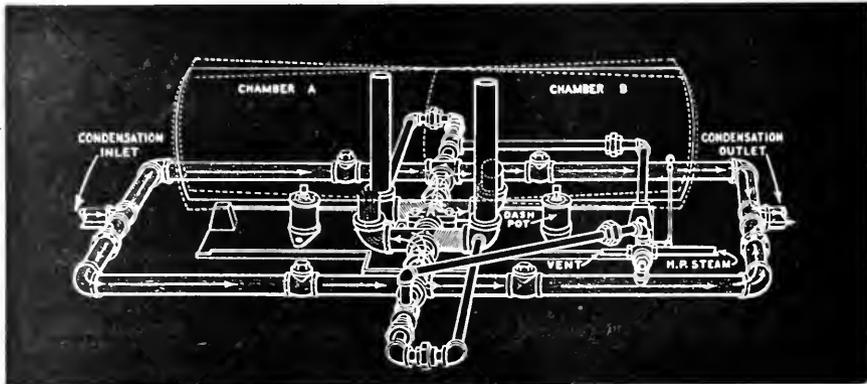
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sor Winnipeg Saskatoon Calgary Vancouver Victoria

EDITORIAL

WILL ENGLISH MILLS MIGRATE?

There is ground for satisfaction in the announcement that the policy of Empire preference declared by England becomes a practical reality with the removal of import licenses for goods from Canada and other Dominions. It is a matter which will inspire much serious thought in several countries. It appears that several factors have been operating in such a way as really to give preference in the British market to goods from neutral countries at the expense of British Dominions. This has been particularly the case with pulp and paper from Scandinavia. Under the license system until recently in force, the lowering of freight rates seemed to favor the import of Norwegian and Swedish products. On account of the attitude of the latter country during the war there has been a feeling that this is unfair and as far as possible, British trade should be kept in the Empire. Vigorous representations of the rights of the various dominions have been made to London, and the result is a situation that is now much more favorable, at least to Canadians.

The pulp and paper industry naturally shares in the good fortune, and a considerable expansion of our export business is to be expected if stocks are available from mills that are not tied up with domestic and American obligations to the extent of their capacity. Permanent overseas business might even induce our mills to proceed with developments that have necessarily been held in abeyance for some time.

Joy is not unalloyed in England, however, over the prospect of large imports of Canadian papers, especially news. English publishers, like some others we know are eager to get sufficient supplies at minimum prices. The mills at home are handicapped by the lack and high price of pulp and other materials, and the disorganization and shortage of labor due to war conditions. All this has naturally restricted output and shortage of paper has circumscribed the activities of most publishers. They argue that plenty of paper will enable them to employ more help and the handling of their product will make work for others all along the line. This is particularly true of book publishers, whose output has been far below normal for several years. They want imported supplies to eke out their requirements. A permanent market for Canadian paper in this field would give a great impetus to our book paper industry, which at present can just about supply home requirements. There is some question as to whether this demand would be very permanent,

however, in consideration of the rather favorable situation of British book mills with regard to supplies of rags, esparto and clay at home and the availability of Canadian (and other) high grade sulphite. We think Canada should also furnish soda pulp to the Mother Country. For wood-fibre papers of any grade, we are yet to be convinced that Canada is not the logical place for their production.

When it comes to newsprint paper we find a rather complicated situation. The newspapers want supplies and the mills are apparently unable to make the paper required. For several years the publishers have been greatly restricted in the size of their papers and seriously handicapped in consequence. The Paper Controller has set price of 4½d which is still in force, and this does not allow much profit, considering costs of raw material and operation. The mills are naturally disappointed in the removal of import restrictions on Canadian products, which not only lets in much needed supplies of pulp, but also admits newsprint at prices they cannot possibly meet. It is said that Canadian newsprint has been offered in England at six cents, which is about the cost of raw material to the home mills. This would not be a serious difficulty if there were a continued demand for all the paper the British mills can make as well as the amounts available here for export, which are probably not great at this time. But England is getting her armies back into civilian life, and putting her munition workers at peaceful production. Many women workers have had a taste of industrial life and like it. Their efficiency and aptitude at certain work may be a big asset in many lines of manufacture. Every opportunity for employment is being watched because it is only the production of goods that will keep the people busy. This is of even greater importance than any mere difference in price.

The relative price of home-made and imported articles is receiving serious attention and there are indications that England will very likely adopt in some degree the policy of a protective tariff. The war has furnished much data on costs of production and the machinery by which this was collected could serve such a policy and make it possible to base tariff regulations on a scientific foundation. Since but little pulp is made in Britain, such a policy would tend to insure a market for groundwood and sulphite to supply the protected paper mills. It would be likely to make competition with Scandinavian mills very keen, unless

the protective policy were extended to cover Empire products, perhaps to the extent of equalizing freight rates. Under such conditions Canadian pulp ought to stand a better chance in the game. Certainly we cannot rely on war sentiment to last very long as a trade factor, at least, in regard to neutral countries.

Launching out on a policy of trade protection is not the end of difficulties for our brother paper makers in England. They may expect constant efforts of the press to lower or remove the tariff on newsprint, as American history will show. Of course, the real solution of the problem is to come to Canada with their mills and bring their families along. We can show them some fine manufacturing sites, and would extend a hearty welcome. Nothing like getting back to nature, i. e., Canada's woods, water powers, productive soil and ocean and rivers for transport.

A SPLENDID IDEA.

Out in Oregon they realize the importance of the wife or mother of each employee as an influence making for safety and happiness in the mill. A fine example in the effort to enlist the whole family in this movement has been started by the distribution of the following letter by the journal of the mill:

"To the wives of all Crown Willamette Paper Company's employees:

"Dear Madam: Makin' Paper takes this opportunity and privilege of writing to you to enlist your co-operation and help in a work we are undertaking, namely, to make the Crown Willamette Mills a very desirable working place for your husband, your sons, and your brothers.

"We consider you a very integral part of our great Crown Willamette family, and feel that you are in a very unique position to be of some considerable service to us. Many of you can contribute local news of interest for us. We would be very glad to have this, but most important of all, every one of you can do very much to help us out in our big safety drive.

"Did you ever consider how vitally interested you should be in our safety work, how much it really means to you, to your family, to your husband? As you know, in case of accident, all the pain, worry and misery is not borne by the man who gets hurt. You and your family suffer as well as he.

"Talk these things over with your husband and try to persuade him to take a very deep interest in our safety work. Your assistance will help more than any other influence. The company will do its full share for safety first, but it will fail unless every man in the plant co-operates fully in this respect.

"As you know, accidents cost the company money, but they may cost the man an eye, a limb, or even his life. The company can afford the dollars, but the man cannot afford to lose any part of his body, or his life. The company may afford the dollars, but the calamity, and that we must all do our "bit" as a patriotic measure to conserve human life and prevent suffering as much as possible.

"We will write you again, from time to time, through these columns. Remember, this is your company, Makin' Paper is your publication. Help us all you can to make it a great success. "MAKIN' PAPER."

GOOD-BYE BOOZE.

Quebec is in a state of considerable ferment over the liquor question. The Government will no doubt stand by their guns as far as hard drinks are affected by recent legislation, but there is a great deal of effort, and cash, being spent in an endeavor to loosen the bung on drinks of less alcohol content. No argument for booze has ever really counted, except possibly the false conception of some doctors which is entirely discredited. Other stimulants are better. The National Safety Council says, in a bulletin on Freezing: "Avoid liquor! It numbs the senses and extensive freezing occurs before you realize it."

What more damning evidence against wines do we need than that they are used, straight or drugged as an agent in the seduction and perversion of girls and women for which some of our cities are disgracefully famous—or infamous?

The whole anti-prohibition campaign is not in the interest of personal liberty, or the mental, moral, physical or material benefit of the people of Quebec and Canada. The sole and only beneficiary of the booze policy is the financial gain of the liquor makers and dealers, whether it be of whiskey, wine or beer. We need alcohol for industrial use and we shall get it sooner and cheaper when industry does not have to compete with appetite.

It is gratifying to note that the Federal Government has decreed for prohibition until peace has been with us a year. Dominion and Provincial Governments intend to leave the final decision on beer and wine to a referendum vote. This is a sensible move, as the question could not well be made a party issue. Let the people rule, but let them rule wisely and with serious and thoughtful action.

INDUSTRIAL INFLUENZA.

Hon. W. S. Fielding, ex-Minister of Finance, referring to the period of unrest through which the country is passing, in addressing a Red Cross gathering, said:

"It is a sort of industrial influenza, and I suppose it will have to go through its course. We must recognize the fact, however, that the working people in the past have not had a full share in the fruits of their labors, and they have come to the conclusion that they are going to have a fuller share in the future, whether we like it or not.

"Anyhow, there is an unrest that comes near the bounds of disorder, and I think that it is a field in which the womenfolk are likely to do good work of conciliation. I was not an enthusiastic advocate of woman suffrage, but the work that the women have done in the war has obliged many people to give more serious thought to the matter than before. In the present day, when men in their passion are ready to strike or do many other things, the women must always stand for the home, the children and the family."

The Sturgeon Falls mill of the Spanish River Pulp and Paper Co. has again run for a whole month without a single accident. That is fine work. Let others do likewise. It pays to be careful; accidents are not necessary.

The Story of Iroquois Falls

Iroquois Falls, Ontario, was scarcely more than a name indicating a possible water power until the Abitibi Power and Paper Company decided to use this power for the production of newsprint paper. The work of clearing was begun in the fall of 1913. The pulp mill was begun shortly after, and was completed during the summer of 1914. It is interesting to note that the first pulp was made on August 4th of that year, which marks the beginning of the greatest of World Wars. A few days later the first consignment was shipped. During the fall of 1914 work was begun on the site for the paper mill, and from the hill on which the structure is built there was taken out some 55,000 cubic yards of clay. This was used to fill in a ravine over which the paper mill railway track was built.

A paper mill to manufacture more than 230 tons of newsprint per day cannot be created in virgin forest independent of a town in which workmen and officers may live. Iroquois Falls is seven miles from Porquis Junction, which also serves as junction point for the mining properties on the Timmins branch of the T. & N. O. About 40 miles north of the junction is Cochrane, which is an important point on the Trans-Continental. To the south of the junction are Liskeard, Cobalt and Englehart, all fair size towns and dependent upon the mining or lumbering industries. These were the nearest towns of any size to the location of the new pulp mill, around which has grown up what is now one of the most attractive communities, both as to organization, layout and accommodations, that is to be found in the north country. Too much could hardly be said of the vision, courage and optimism of the man who could conceive and carry out such a project as the Abitibi Power and Paper Co. at Iroquois Falls, in virgin wilderness. F. H. Anson, Sr., has these qualities, and he is primarily responsible for the success of the company, because of his own character and his ability to enlist and inspire the full co-operation of associates and employees.

It takes time to develop such a town, but a beginning was made when the mill was started. A number of difficulties were met, the most serious of which were forest fires. It will be recalled that at the time of the great fires, 1916, the town was completely wiped out, and the inhabitants found shelter in the concrete mill buildings, where by keeping the great fire pumps continually in operation serious loss of life was entirely avoided. Even this catastrophe did not halt operations, and work was immediately started to reconstruct the town. Some temporary structures were erected, but these have gradually given

way to permanent buildings. Each dwelling is a separate house, and houses are built only on every other lot, 50 x 50 feet each, so that each family has an additional half lot to cultivate. At the time of the editor's visit last summer the town presented a most attractive appearance, with its well kept lawns, comfortable homey looking dwellings, and with good streets and sidewalks. The streets are well made of crushed rock covered with tarvia. These streets need not be torn up at any time for making repairs or changes in connection with the water gauge or lighting systems, since these are all located in the back lanes. Some idea of the attractiveness of the town can be gained from the illustrations.

Pictures, however, cannot give indication of the spirit of the place where the men and the management seem to be working in the greatest harmony, and all with an honest endeavour to make Iroquois Falls the best town on the map. One point that might be mentioned in this connection is the system at the mills which gives the men every possible opportunity to find a place for which they are best suited. No man is discharged without the fullest investigation, and an earnest attempt to find the place where he best fits, and no man is likely to leave until he has had a talk with the sympathetic and enthusiastic employment officer to see whether it is the company's fault that he desires to make a change, and if possible arranging for him to try his hand at some other work. The same care is used in employing new men so as to try if possible to put them, in the first place, in a position where they will stay until their proficiency warrants their promotion. This system is of great value in transferring men temporarily from one department to another if one particular kind of work should become slack because of a shortage of material, adverse weather conditions or other circumstances.

The town was incorporated in June, 1915, and our friend, S. G. McCoubrey, has served continuously as Mayor. It looks as if he had a life job. We might mention at this point an incident that has no direct connection with the mill, but is interesting. Mr. McCoubrey's brother-in-law, like himself, comes from the north of Ireland, from a little paper mill town near Belfast. The young man referred to enlisted in the United States Forest Regiment last January. He was on board the Tasmania, which was torpedoed, and was washed ashore, practically at his mother's doorstep in February. After a little expert nursing he crossed to France in March, and had his sawmill in full operation in April. As the Mayor says, "That's going some."



On the left is Director's House, facing Cambridge A ve. Houses in front, on Seventh Street, are occupied by Superintendents, the Mayor, and other dignitaries.

The houses are all heated by hot-air, and are equipped with bathrooms and supplied with hot and cold water. There are three churches—the United, Anglican and Roman Catholic. There are also a number of fraternal societies. A restaurant and bowling alley have recently been completed, and with the addition of four pool tables this furnishes a very well equipped centre for refreshment and sport. The fire of 1916 has interfered with the development of the plan for public schools, but temporary buildings have been made good use of, and the excellent staff of instructors has made a good record in this department. This is a matter in which the company takes a very deep interest, and we can expect in the near future



Looking down Seventh Street from the square.

to see at Iroquois Falls one of the most modern and best equipped schools in the north country.

Work is not all that occupies the attention of the employees, and other residents of the town, for there is a brass band of twenty-five members, whose services are in great demand in the vicinity. Sports also receive their proportion of attention, and Abitibi not only has baseball, basketball and other teams representing the various departments of the mill, but also has what might be called a varsity team in each branch that have given good accounts of themselves in competition with teams in other towns. For those who have a literary inclination there is an opportunity to air it in the "Broke Hustler," which is published frequently at the mill. This live little paper gives the news of the mill with occasional knocks at the various members, and considerable general information. Recently the Broke Hustler has been publishing a monthly illustrated supplement which has given some very interesting views of the town and the mill. We think it is about time that the illustrated supplement introduced us pictorially to the various members of the management and operating staff of the company. It will thus be seen that the company considers more than the simple making of profits and considers well its obligation to see that the members of its organization and those who come to live in the community are well housed, well fed, well paid, healthy and happy. This, of course, is partly good business, but the company realizes that complete co-operation is necessary for the harmonious working and living of the community. It is not to the advantage of workmen or employer to be continually changing, and every effort is made to bring the right men to Iroquois Falls, and to make it worth their while to stay there.

The Abitibi Power & Paper Co., Ltd., has sent to the fields of France and Flanders, just over 1,000 men, represented in the Princess Pats, the 10th, 13th, 14th, 24th, 159th, and the 228th Battalions, Second

Pioneers, First Forestry Draft, 257th Construction, 1st C.O.R., 2nd C.O.R., R.F.C., and the Naval Services.

The woods department extends from the camps just across the river clear back to the bush, and the booms near the mill hold a large reserve supply of logs, where the activity of the woodsmen ends. This department is a distinct organization from the operating of the mill, but of course works in absolute harmony with it. The editor had an opportunity of visiting camp 16 at tea-time, and if other camps are as well taken care of and pleasant in their location and equipment it is certainly no hardship to work in this department of the organization.

The mill is well known as one of the most up-to-date and efficient paper manufacturing plants on the continent. The value of concrete construction was fully demonstrated during the big forest fire, when the whole community found refuge and safety within the stone-like structure. A large part of the construction was done during an exceedingly cold winter, but due to the care with which the concrete work was handled there has been no trouble with defects in the concrete. The mill is located on a steep bank with the groundwood department so far down that the grinders can be operated by direct connected hydraulic turbines. There are at present thirty Waterous grinders using 32" wood. The pulp is diluted and passed through the bull screens, and then pumped to the wet machine room, where it is screened in a new series of rotary screens, and thence passed to the thickeners or the wet machines.

One side of the wet machine room handles the groundwood pulp and the other side the sulphite pulp. The laps from the twenty wet machines are then passed to fourteen 600-ton hydraulic presses and eight baling presses which prepare the pulp for loading on the freight cars which are run in on two tracks to the middle of this department. The grinder room has a daily capacity of 330 tons of groundwood, only part



A close-up of the dam and mill.

of which is available for sale, the larger part being required for the newsprint mill.

The remainder of the plant outside of the grinder room is operated by steam and electricity.

The steam plant is equipped with 8-478 H.P. and 2-358 H.P. water tube B. & W. boilers; four of these are fitted with the Jones' stoker, and four with the Murphy stoker, the remaining two with the Taylor stoker. They are equipped with both induced and forced draft fan engines and Sturtevant economizers,

and a couple of brick smoke stacks well over 100 feet high. The power station is run with 4-1,250 K.V.A. Westinghouse generators with three exciters. These four machines generate 4,200 H.P. from a head of 43 feet.

The sulphite mill manufactures all the sulphite pulp necessary for the company's requirement for its paper mill and has occasionally an excess for sale. This mill is equipped with four 14-ton digesters. The acid is made with the assistance of four sulphur burners and a Jenssen lime-stone tower system. An automatic recording thermometer registers the temperature of the gases in the combustion chamber of the sulphur burner and also at the coolers. Recording instruments are used at practically every point in the plant, such as steam flow meters, water meters, recording speed in temperature gages, etc. This equipment is backed up by a well equipped chemical laboratory and a staff of expert chemists and engineers.

From the blow-pits the sulphite pulp passes three knotters, twenty-four flat screens, five centrifugal screens and four deckers or pulp concentrators. This mill has a capacity of 130 tons, a part of which is run over wet machines either for storage or sale as has been mentioned, the rest passing directly from the deckers to the paper machines.

The pulp passing to the machines is concentrated as has been mentioned. An effort is made to maintain both groundwood and sulphite pulp at a uniform consistency so that the pumps will always deliver the same proportion of each pulp to the mixers and in this way

insure a uniform quality of newsprint paper which is the main product of the mill.

From the vertical mixers which are located in the decker and screen room the pulp is pumped to the paper machines and can be passed through Jordan engines if desired. There are four machines, one 202" Walmesly, one 186" and two 156" Pusey and Jones machines. The average speed is 624 feet per minute and the average production is 228 tons of finished paper in twenty-four hours. The record tonnage for a single day is something over 243 tons. One of the machines is equipped with the Sheehan mechanical back-tender, a rope device for carrying the paper over the machine.

Considerable interest has been aroused by the plans of the company to double its capacity by adding two paper machines, each 235" wide—almost 20 feet. These are already on order from the Walmesley Company, at Bury, England.

The management of the mill is directly in the hands of Mr. R. A. McInnes, who has been in charge for the past couple of years and has associated with him a very capable staff of superintendents and foremen, and has succeeded in so knitting together and inspiring the organization that continuous satisfactory production is easily maintained and with the most cordial feelings between the management and the men. The president, Mr. F. H. Anson, Sr., makes frequent trips and the company is always pleased to have visitors and a trip to Iroquois Falls remains a very pleasant memory.



Mill and tail race from the bush across the river. The town begins to show on the crest of the hill; in right hand corner is Woods Dept., Camp 15.

AN ATTRACTIVE DISPLAY OF PAPERBOXES.

The Rudd Paper Box Co., Limited, of Toronto, of which W. P. Bennett is President, like the millinery and garment houses, is holding a sort of "spring opening" by making, in their factory at 372-376 Richmond street west, a varied and most attractive display of set-up and folding boxes. The exhibit has been viewed with interest by a large number of the customers of the firm, and is perhaps the first effort ever made in Canada toward showing to advantage all the new things in containers, which are ready for the trade during the coming year. The display consisting of several hundred boxes of all kinds, shapes and sizes, colors and designs, is one that opens the eyes of the visitor to the possibilities in this great industry.

Some time ago the Canadian Pulp and Paper Association sent out a leaflet to its members for distribution among customers, headed, "Why Send Your Goods to Market Dressed Like a Slonch." The Rudd Paper Box Co. forwarded several of these leaflets to their patrons, and conceived the idea of getting up a comprehensive display that would show all the regu-

lar and new products that they are presenting for the coming year. Invitations were mailed to many persons to witness the admirably arranged booth, which has called forth much favorable comment.

In folding boxes there are the numerous lines which have been produced for years, and also the new waxed board carton, which new container is being used by tea firms and others, being strong and airtight. In the set up box line the art designs and coverings are imposing and pleasing, and the covering, printing and embossing are done right on the premises. Fancy shapes and novelties are revealed in candy boxes, perfumery boxes, handkerchief, glove, waist, hat, collar, hosiery, toilet, bon bon, papeterie and numerous other lines, whether conceived for utility and economy or for more elaborate and ornamental effect. It is generally agreed that a good package unquestionably has a strong influence on sales, and in the daintier and more exclusive lines the prettier and more irresistible the color scheme and harmony the more subtle and compelling is the appeal. The Rudd Paper Box Co. have received hearty congratulations on their enterprise, and will make the display a permanent institution, probably twice a year.

RAINY RIVER REORGANIZATION.

The Rainy River Pulp & Paper Co., with mills at Port Mellon, Howe Sound, B.C., for the manufacture of sulphate pulp, find it necessary to effect a reorganization in order to continue operations. There have been several successive companies operating this mill, but none, apparently, has made a marked success of it. The plant is only 28 miles from Vancouver, with regular boat service. Nearby is the Mill Creek sulphite mill of the Whalen Pulp & Paper Co. The following plan was presented by Robt. Sweeney, at the meeting of creditors and wage earners on March 10th, and is transmitted with the approval of John Elliott, Assignee.

1.—A company to be formed by letters patent under the Dominion Companies Act, for the purpose of taking over from the present company and its Assignee, the whole undertaking, goodwill and properties of the present company, subject to the indebtedness below mentioned.

2.—The capital of such company will consist of 10,000 common shares, without any nominal or par value.

3.—There shall be five directors of the new company, to be appointed in the manner following:

(a) One to be appointed by the holders of the First Mortgage Bonds mentioned in Paragraph 4.

(b) One to be appointed by those creditors of the present company who receive common shares in the new company, as provided in Paragraph 9.

(c) Three to be appointed by the holders of the notes to be issued as provided in Paragraph 6.

As and when the securities (a) and (c) are paid off or cease to exist, the right of appointment of directors held by the respective holders thereof shall pass to the owners of the common shares of the new company.

4.—The new company shall take over the undertaking and properties of the present company, subject to the indebtedness secured by the Trust Deed securing the present issue of \$200,000 Gold Bonds. The new company shall have the right, if it shall be found expedient or necessary to do so, to make a new issue of first mortgage 6 per cent Gold Bonds of the par value of \$200,000 for the purpose of retiring the present issue.

5.—The letters patent and by-laws of the new company shall also authorize the issue of \$500,000 refunding 7 per cent. Gold Bonds which shall be issued for the following purposes:

(a) \$200,000 thereof for the retirement and refunding of the outstanding bonds of the present company, or (if same are retired as mentioned in the preceding paragraph) for the retiring or refunding of the first mortgage bonds of the new company issued as mentioned in the preceding paragraph.

(b) \$200,000 thereof to be pledged as collateral for an issue of \$100,000 7 per cent Collateral Gold Notes of the new company to be issued as mentioned in Paragraph 6.

(c) \$100,000 and the \$200,000 when released from the foregoing collateral pledge, to be available for sale or pledge, for the company's purposes as the directors may from time to time think fit and proper.

6.—The Letters Patent and By-laws of the company

shall also authorize the issue of \$100,000 7 per cent collateral gold notes to be secured by \$200,000 of said refunding mortgage 7 per cent Gold Bonds. Said notes shall be offered for sale at par, and be repayable as follows:

\$15,000 at the end of one year.

\$20,000 at the end of two years.

\$30,000 at the end of three years.

\$35,000 at the end of four years.

7.—A syndicate is prepared to underwrite the whole of the \$100,000 collateral notes at par, in consideration of their receiving the whole of the new company's shares as fully paid.

8.—All of the creditors of the present company (except bondholders, wage-earners, the Government of British Columbia, and any other preferred creditors) shall be asked to purchase an amount of said collateral notes equal to one-third of their respective claims against the present company, at par, on condition that they receive for so doing:

(a) An acknowledgment from the new company that it is responsible for the present company's indebtedness to such creditor and that it will pay same without interest in three equal instalments, at the end of three, four and five years from the date of incorporation of the new company, or sooner if possible.

(b) An amount of common shares in the new company which, if taken at the par value of \$100 will equal the amount of their claim if a multiple of \$100 or if not then the nearest multiple of \$100.

9.—Any creditor not complying with the provisions of the preceding paragraph shall receive from the new company in full satisfaction of his claim against the old company an amount of common shares which taken at the par value of \$100 each will equal the amount of his claim against the old company if a multiple of \$100 or if not then the nearest multiple of \$100.

10.—The common stock to which creditors of the old company are entitled under the provisions of Clauses 8 (b) and 9 hereof will be provided by the syndicate out of the shares they receive for underwriting the \$100,000 collateral gold notes.

11.—The letters patent and by-laws will provide that no dividends shall be paid on the common stock until the collateral notes mentioned in Paragraph 6 have been paid off.

12.—The \$100,000 cash to be received from the sale of \$100,000 collateral notes will be used exclusively for paying the following:

(a) All preferred and secured claims.

(b) Costs of incorporation and organizing new Dominion Company and creating the securities herein mentioned, and all the costs of this reorganization.

(c) Enlarging the present plant and equipment.

(d) Working capital.

13.—The form of application for letters patent and the by-laws of the new company shall be subject to the approval of the assignee, and the form of the trust deeds to secure the various issues of securities hereinbefore mentioned, and the respective maturity dates thereof, and the form of said first mortgage bonds, refunding bonds and collateral notes, shall also be subject to the approval of the assignee, Vancouver, B.C., 10th March, 1919.

Soda Pulp Manufacture

By E. SUTERMEISTER, S. D. Warren Co., Westbrook, Me.

(Continued from Page 264.)

PART 4.

In Part I, Mr. Sutermeister discussed the preparation and composition of cooking liquor and the apparatus and materials employed, with illustrations; in Part II, the recovery of lime, with analyses; the principles and practice of cooking operations, with curves; in Part III, mill practices with data relating to woods employed; modified processes; by-products of cooking.

Digesters.

Modern digesters for use in the soda process are made of steel plates where formerly they were of iron. This change is probably due to conditions in the iron and steel industry rather than to any marked superiority of steel, for as a matter of fact steel is probably more subject than iron to changes of internal structure which would lead to loss of strength. As the cooking liquor has no corrosive action on steel no protective lining is necessary. There is even a tendency for the cooking liquor to be the reverse of corrosive for an inspection of digesters after being used for some time has shown in many instances a very thin, grayish coating upon the walls. Analysis of this coating has proved that the greater part of it consists of calcium carbonate and that not over one per cent is material which could possibly have been derived from the digester itself. The formation of this scale is probably caused by the lime salts which are introduced either in suspension or in solution in the cooking liquor and which are subsequently deposited either by heat or evaporation.

Structurally digesters are made either riveted or welded, the latter construction being preferred wherever permissible because of its freedom from leaks. Because of the uncertainty of welded joints some insurance companies object to this type of digester, particularly for large units, and a welded digester about 10 ft. in diameter and 49 ft. long is apparently

about the maximum on this account. With riveted plates the strength of the seam can be much more accurately gauged and large digesters can be safely constructed. They have the serious defect, however, of frequently leaking and the only remedy appears to be electrical welding of each seam and rivet head.

Two distinct types of digesters are used, the rotary and the stationary vertical digester. The rotary is the older type, but is seldom installed in modern mills because vertical digesters are superior in a number of ways.

Rotary riveted digesters in American practice are generally about 20-24 ft. long and 7 ft. in diameter; larger ones have been constructed but have been very hard to keep tight because the strains set up as they rotate tend to start their seams. They are filled with chips through two man-holes on the sides and in order to get in as great a charge as possible some form of tamping device is necessary. A steel cone fixed, apex down, on the end of a shaft which is alternately lifted and dropped by an eccentric gives excellent results in packing in the chips. The liquor is also run in through the man-hole, generally at the same time as the chips. The man-holes are oval in shape which enables the covers to be inserted and then pulled up against the inside, where they make tight joints by means of lead gaskets. When first put on they are held in place by yokes extending across the manhole on the outside, but as the pressure within the rotary increases they are held more and more firmly against the edge of the man-hole so that the yokes eventually hold no part of their weight. Figure 12 shows the construction and essential features of a rotary digester of a type commonly used in the soda process.

The steam for heating the charge generally enters the rotary through one trunion: It is sometimes distributed by perforated pipes inside the rotary, but usually blows in directly, though the inlet is sometimes covered with a perforated strainer plate. The trunion

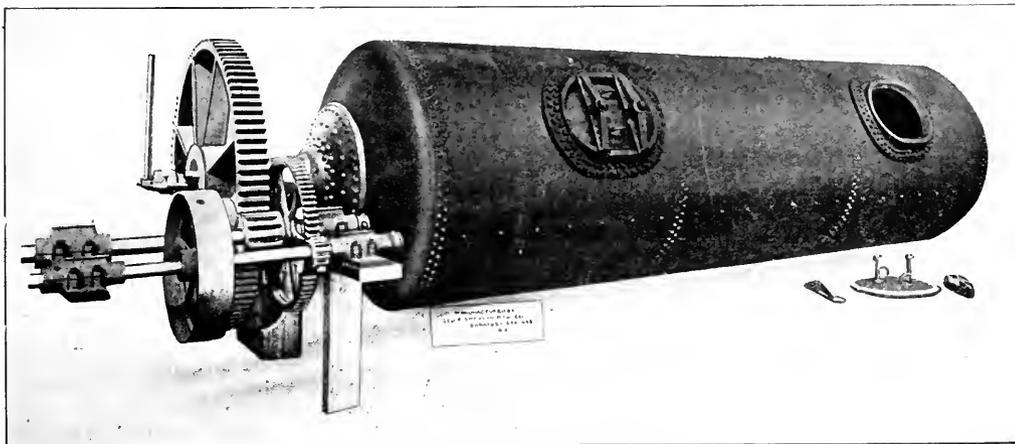


Fig. 12.—Rotary Boiler. (Courtesy Baker Mfg. Co.)

at the other end of the rotary is piped up so that air or steam can be relieved through it. On the inside the pipe extends to one side and ends under a strainer plate so that when the rotary is in one position this relief pipe ends above the surface of the liquor and steam only can be discharged. After the cook is completed the relief line is opened and the pressure reduced. During this operation some fibre and considerable black liquor escape, hence there is placed on this relief line a separator which takes out entrained liquor and fibre while allowing the steam to pass onward to a heater where it is employed in heating water for use in washing the fibre. After the pressure has been reduced to a safe point the man head is forced inward by means of a lever and the last trace of pressure is blown off. The heads are then removed and the charge emptied into wash pits below by the simple expedient of revolving the rotary.

Vertical digesters vary much more widely in size than do rotaries. Formerly a digester 7 ft. in diameter and 25 ft. tall was considered a good size, such a digester holding approximately three cords of wood. The present tendency is toward larger units about 10 ft. diameter by 49 ft. tall for welded digesters and 12 ft. in diameter by 40 ft. tall for riveted construction. Both of these sizes hold between 14 and 15 cords of wood and produce eight to nine tons of fibre at each charge when treating poplar wood.

Vertical digesters when welded are generally cylindrical with an inner bottom cone of perforated metal while if they are of the riveted type the bottom portion is usually conical in shape thus avoiding considerable waste space. These digesters are also fitted with perforated false bottoms covering the entire conical portion. The man-hole for charging is at the top and the discharge pipe leads out of the centre of the bottom. Steam is usually introduced through two inlets at opposite sides of the digester and just above the false bottom. Connected with each steam inlet on the inside of the digester is a semi-circular perforated pipe, the perforations being so arranged that the steam blows upward along the sides of the digester, thus assisting circulation. In some cases it has been found to improve the cook if a small amount of steam is also introduced just above the blow off valve in the extreme bottom of the digester.

Circulation and Steam Consumption.—One of the essentials for good cooking is thorough circulation of the liquor and this is secured in a number of ways. In some installations there is no special provision beyond that caused by the inrush of steam and the relief of air and steam from the top. In other cases a pipe inside the digester extends from below the false bottom to the top of the digester and a steam inlet is below the end of this pipe. The steam, rushing up this pipe, carries the cooking liquor with it and distributes it over the top of the charge. The most satisfactory method is to pump the liquor from below the false bottom and discharge it into the top of the digester. The only difference in pressure on the two sides of the pump is that due to the height of the digester so that very little power is required. For circulation only, centrifugal pumps have been found satisfactory although they have to be packed quite frequently, but if fresh liquor is to be injected during the cook, as is done in some mills, a steam pump must be used. Figure 13 gives a general idea of the construction of a vertical digester. It shows the man-hole and cover

at the top, the discharge pipe leading out of the bottom, the steam inlets, the perforated false bottom and the circulating pump with its appropriate piping.

The sequence of operations in a digester is practically the same as in a rotary: The chips and liquor are charged through the top, no tamping being necessary because of the shape of the digester. The volume of liquor per cord of wood varies from about 710 gals. to 940 gals.; the lower figure being about as little as can be used and still maintain circulation. Steam is then turned on and the pressure brought up as rapidly as possible. During this period air is relieved from the top several times so that no false pressure may be recorded. When the cook is completed the entire charge is blown out under full pressure through the blow off pipe at the bottom of the digester. A complete record of all of these operations should be kept by means of a recording pressure gauge or preferably a recording thermometer since it is really the temperature rather than the pressure which controls the cooking and a thermometer will not give false impressions if the digester should happen to fill up with water because of excessive condensation.

The steaming of a cook may be considered as taking place in two stages in the first of which the charge is brought up to pressure while in the second the pressure is merely maintained at the desired point. In the first stage there is a very rapid consumption of steam while in the second only enough is used to make up for the heat lost in radiation. Tests with a steam flow meter on rotary digesters of three cords capacity showed that for the first 30 to 40 minutes steam was consumed at the rate of 7,500-7,800 lbs. per hour; the consumption then dropped off rapidly until at the end of an hour and fifty minutes it was only about 500 lbs. per hour which was just enough to take care of radiation losses. With a larger rotary holding 6½ cords of wood the consumption at first was at the rate of 10,800 lbs. per hour while the radiation loss amounted to 1,050 lbs. per hour. The total steam consumed in these two tests was 12,125 lbs. for the smaller and 19,360 lbs. for the larger rotary. This latter figure corresponds very closely with that obtained from a comparison of the strength of the alkali entering as cooking liquor with that discharged as black liquor at the end of the cook.

In the case of 15 cord digesters meter records show that from the time steam is turned on until full pressure is reached there is a consumption of 34,000 to 40,500 lbs. of steam for a 12 ft. x 40 ft. digester without insulating covering. The time in which this steam is used up varies in different cooks from one and one-half to two hours while in the intervals in which only radiation losses have to be made up the steam consumption is comparatively slight. The demand for steam therefore varies enormously and where a number of digesters are being operated simultaneously it is very essential that they be charged and steamed in rotation so that no two may be drawing heavily at the same time and the boiler house load may be kept as uniform as possible.

The loss of heat due to radiation varies with the amount of surface exposed and with the temperature of cooking. With a digester 12 ft. in diameter by 40 ft. long there would be about 1,430 sq. ft. of surface exposed and if the cook is made at 110 lbs. steam pressure there would be a radiation loss equivalent to about 1,100,000 B. T. U. per hour assuming that the

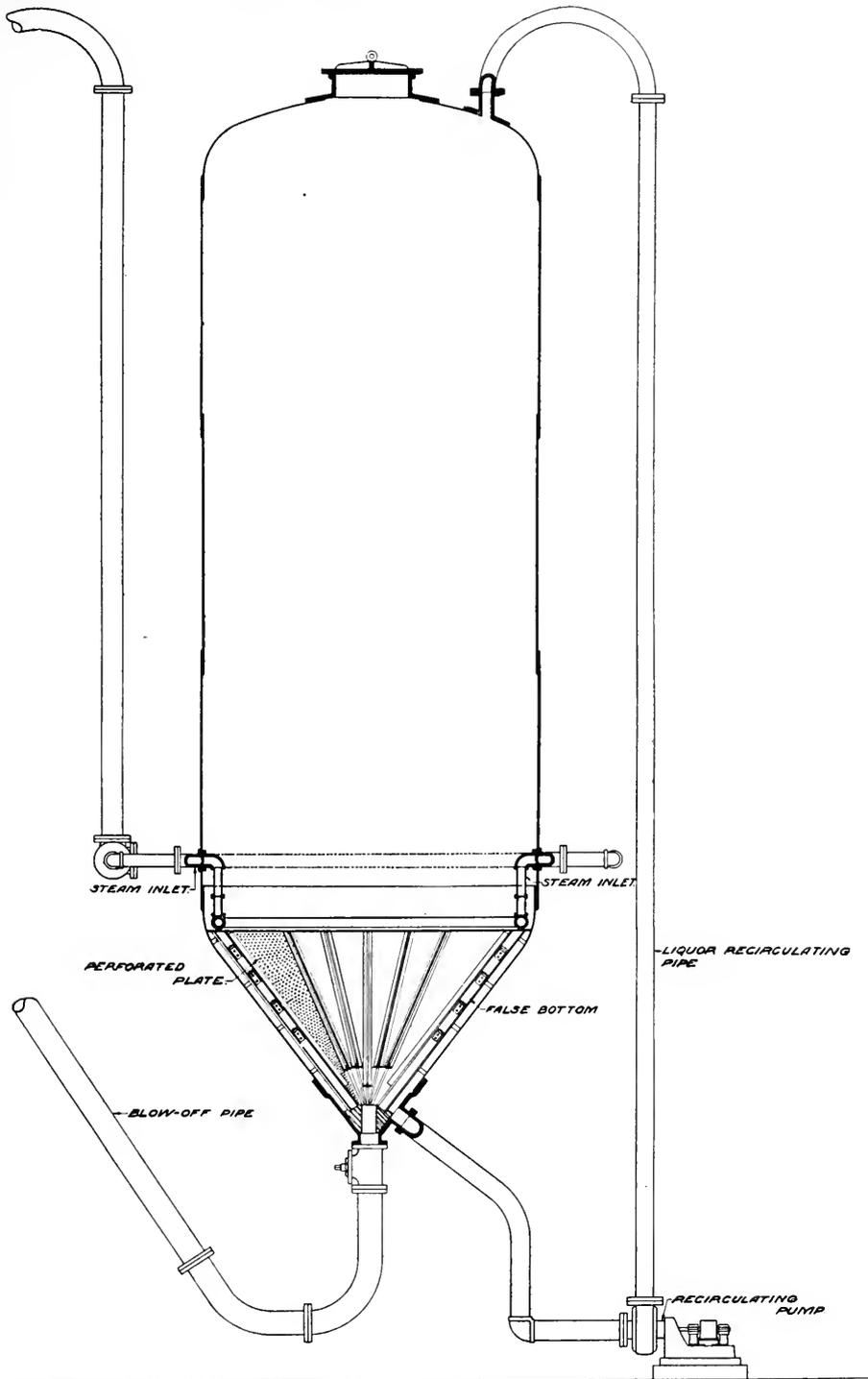


Fig. 13.—Section of Vertical Digester, showing inlets, pumps and piping.

same formula holds as for radiation from steam pipes. This corresponds to approximately 1,250 lbs. of steam per hour required to make up for radiation loss. If the digester is covered with a two inch layer of good insulating material such as sponge asbestos or magnesia about 85 to 90% of this loss can be avoided. The radiation loss per ton of fibre in rotary digesters is greater than in vertical digesters because their smaller size exposes a larger surface in proportion to their entire contents.

The quality of fibre from the two types of cookers appears to show some characteristic differences. That from the rotaries is bent and twisted and shows the effects of the tumbling around which it undergoes during cooking while that from the digesters is much straighter and appears to have suffered less wear and tear. The bursting strength of sheets made from the two fibres under identical conditions of beating is very different, that from the digesters averaging fully 70 per cent greater than that from the rotaries. This difference in strength is very evident in the papers in which the two fibres are used, and in order to produce papers with the same characteristics it is necessary to treat the two fibres quite differently in the beaters.

While considering types of digesters mention should be made of one or two modified forms which are used occasionally. One of these is the jacketed digester in which the steam for heating is between the outer and inner walls. These have been found by experience to be very hard to keep tight as the stays between the two walls are continually causing leaks. For this reason the digesters cannot be covered with insulating material and are therefore very wasteful of steam.

In Morterud's patented digester the steam is not blown directly into the charge but the liquor is taken

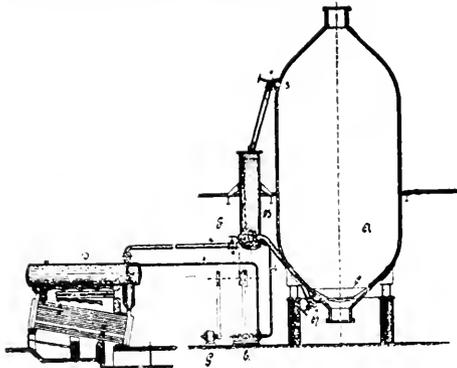


Fig. 14.—The parts of the apparatus figured in the cut are as follows: A, digester; B, heating apparatus, in which the acid or liquor is heated up indirectly; C, strainer, by which the wood chips are kept back; D, boiler, delivering the steam wanted for the heating; a, the steam pipe; E, condensing water pump, by means of which the water of condensation is taken from the heating apparatus to the boiler; F, circulating pump, by means of which the acid or liquid is kept in a constant circulation from the bottom of the digester — through the heating apparatus and back to the digester at the top; H and I, valves, for the inlet and outlet pipes on the digester.

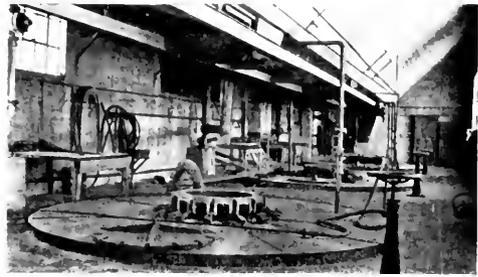


Fig. 15.—Charging Floor of Digester House.

from the bottom of the digester, passed through an outside exchange heater and back again into the top of the digester. Steam is used as a source of heat in the outside heater and the condensed steam is returned to the boiler under full pressure as feed water at a high temperature. It is claimed for this process that it saves coal and alkali and gives an increased yield because of the more even temperature of the cooking liquor. This type of equipment is said to be extensively used in Europe in the sulphate process and it is attracting considerable attention in America. Fig. 14 shows diagrammatically the equipment and method of operation of this system.

A comparison of the two types of digesters, rotary and stationary, brings out the following points:

1. Vertical digesters save much floor space per ton of fibre produced but require much heavier foundations and much taller buildings.

2. The power required is about the same, that required to turn the rotaries being practically equivalent to that necessary to operate the circulating pumps of the digesters.

3. Digesters require less time between cooks. It is possible in a 15-cord digester to blow a cook and refill with chips and liquor ready for steaming in 50-60 minutes while with a 3-cord rotary it requires about 1 1/4 hours to blow down pressure, 1/2-3/4 hour to empty and 1 hour to fill with chips and liquor, a total of about three hours.

4. The steam required per cord of wood is greater in rotaries because of their smaller size and the greater amount of radiation in proportion to the charge. On the other hand the steam blown off in reducing the pressure in the rotaries is utilized in heating water while none is usually recovered when the digesters are discharged.

(To be continued.)

RICHES IN PINE WASTE.

The industrial value of a full grown pine tree is no less than five times what we get from it. If, of all the yellow pine cut, the entire trees were used, not only as theoretical science, there would be added to the estate of the American people every day 40,000 tons of paper, 3,000 tons of rosin, 300,000 gallons of turpentine and 600,000 gallons of ethyl or grain alcohol, together with the fuel for these industries and the lumber we get as it is.

Of course this would require a heavy expenditure of capital and a large amount of labor, but the facts remain.

THE HOUSE OF BOWATER.

The Pulp and Paper Magazine takes pleasure in introducing to those of its readers who do not already know them, a fine old English paper house. Few concerns with whom they do business abroad have greater facilities for service to the Canadian pulp and paper maker than Messrs. W. V. Bowater and Sons, Limited, the great paper makers, agents and merchants, of 159 Queen Victoria Street, E.C. In addition to its commercial achievements the house of Bowater has had the honor of providing a Lord Mayor for the City of London, and during the war had seven of its members, as well as its "chief," on service." We are sorry not to have the photographs of these eight gallant gentlemen.

Established in 1881, the House of Bowater, which supplies every variety of paper for all branches of the trade, has, within a period of thirty years, not only developed its operations upon a scale of very exceptional magnitude, but attained in connection with the paper trade a position in some respects unique. Their large requirements with respect to warehouse space and transport conveniences are met by stores in Worship Street, E., and several well-equipped wharves, also with ample storage accommodation at Bowater's Wharf, Commercial Road, Lambeth, S.E., and Morden Wharf, Greenwich; there is also a Scottish branch warehouse in Hydepark Street, Glasgow.

Apart from this, the house of Bowater has branches in Bombay, Calcutta, Madras, Cochin, Colombo, Shanghai, Yokohama and Kobe. Their business ramifications also extend to Australasia, Africa, South America, and so on. They also have business premises at Woolworth Building, New York.

Glancing now more particularly at the nature of the firm's operations, we note first their eminent standing with respect to the supplying of "news" papers, i.e., papers for the printing of daily, weekly and other newspapers and journals. In this department of the paper trade they take a leading place for transactions of quite unusual magnitude. For instance, one contract a few years back represented a supply of paper to the value of about £3,000,000, this being placed on behalf of "Harmsworth" publications.

The house of Bowater has always proved equal to the most exacting requirements of its immense journalistic clientele, which includes the publishers and proprietors of many of the principal London and provincial newspapers. Even the extraordinary demands incidental to the war, before paper restrictions were enforced, and special editions were of hourly occurrence, failed to overtax their powers. All their contracts were duly fulfilled, and many who had no contracts with them resorted to them for supplies and were accommodated when their own contractors had been unable to keep pace with the exceptional calls made upon them.

But it is not for "news" papers only that Messrs. Bowater are celebrated. They have taken up successfully many other branches of the trade, and are to the fore as suppliers of such lines as super-calendered and machine-finished printings, fine art and imitation art papers, and art boards, numbering many of the largest publishing houses among their customers for these goods. Glazed and unglazed colored printings, book and pamphlet papers, mill wrap-

pers, sealings, casings, E. S. writings, typewriting papers, art covers, cartridges, M.G., glazed and unglazed natures, tissues, sulphites, glazed, unglazed, and kraft browns, and all grades and kinds of boards and papers generally, are also within the wide scope of their dealings, and greatly swell the sum-total of their trade. Nor is this all, for they have entered largely into such auxiliary operations as the supplying of papermakers' requirements, notably in the direction of machine wires, belting, china clay, etc., handling great quantities of the same as agents for the producers. Noteworthy in this connection is their agency to the paper-mills of the United Kingdom for the high-class beltings of the Southward Manufacturing Company, Limited.

Yet another highly important department is that for the handling and supplying of waste of all grades for milling purposes. This includes waste newspapers, etc., of every description, for the proper disposal of which Messrs. Bowater have special facilities. They possess the complete confidence of the newspaper trades in this matter; give export or re-manufacture guarantees; and are, perhaps, unequalled in the extent of their buying of surplus newspapers and all machine-room waste. Finally, there are the operations at the firm's wharves, where great activity is always manifest in the lightering, landing, warehousing, and delivery of goods. All such service as this is most methodically and satisfactorily performed, together with the careful packing of goods of every description for export, this latter work being facilitated by powerful hydraulic presses of the most up-to-date pattern.

The Bowaters came from Lancashire, originally, and the family has given more than one notable name to the list of those who have served their country with valor and distinction in both military and civil affairs, with the example of Admiral Edward Bowater who fought under Nelson at Trafalgar, and General Sir Edward Bowater, who took part in the Battle of Waterloo, it is natural that other members of the family should rally to the colors. Here is the record for the Great War, and a proud one it is:

Sir T. Vansittart Bowater, Bart. (Hon. Colonel, 10th Royal Fusiliers), (City of London Regiment), Lord Mayor of London, 1913-1914; Major Frank H. Bowater (11th County of London Battery, R.F.A.); Lieut. Noel Bowater (County of London, R.F.A.); Lieut. Eric Bowater (28th Division, R.F.A.); Lieut. Rainald V. Bowater, (Anti-Aircraft Defence, Royal Garrison Artillery); Capt. Dudley Bowater (Westminster Dragoons); Capt. Victor S. Bowater (4th Battalion, Royal Fusiliers, City of London Regiment); Lieut. Leslie Frank Bowater (3rd Dragoon Guards).

Sir T. Vansittart Bowater has also been the recipient of a number of honors from foreign Sovereigns and States.

GAS MASKS FOR SALE.

The National Safety Council makes an announcement of special interest to sulphite mills and bleach plants. The United States Army offers for sale, at \$3.00 each, E.o.b. Long Island City, New York, a limited number of new gas masks of the R. F. K. and Tissot types. Extra canisters are obtainable at \$1.00 each. For particulars address Director of Chemical Warfare Service, U.S.A., 19 W. 44th St., New York City. Drawings of the two types of masks may also be seen at the Council's office in Chicago.



UNITED STATES NOTES

Present indications as to the outcome of the conference to be held here at the Belmont Hotel on March 18 between the paper manufacturers and officials representing the International Brotherhoods of Paper Makers are that a complete and harmonious adjustment of differences cannot be hoped for. It seems to be the consensus of opinion among the manufacturers that the demands of the union, as outlined by President Carey, are beyond reason, and would only form a basis of negotiation. But before these can be at all considered at the conference, the important problem of establishing the status of the present agreements must be adjusted. It is not unlikely that a parting of the ways may come at this juncture without consideration of the fourteen points suggested by President Carey, the more important of which were reported in the last issue of the Pulp and Paper Magazine. If this should happen, a general strike may follow about May 11.

Writing and book paper manufacturers and selling agents using names and terms for their various brands and styles of papers "that appear to be misleading," have been summoned to a hearing before the Federal Trade Commission on March 28. Such names as Holland, French, Italian, Nainsook, Vellum, etc., are just a few of those included.

In line with its policy of expansion and in anticipation of an increase in business that appears just ahead, the American Writing Paper Company, of Holyoke, Mass., has recently added to its sales department staff, Wm. J. Blackley, who leaves a position as assistant manager with the Niagara Paper Mills, Lockport, N.Y.; Kasson M. Dodson, formerly connected with the Kimberley, Clarke Company of Wisconsin, and Allen Bowles, who rejoins the company's sales force following a year's service in the United States Army. President Galliver believes that with these and other needed reinforcements the sales department will soon be sufficiently fortified to meet any and all demands during the reconstruction period. The American Writing Paper Company has also secured the services of Mr. F. C. Clark, who will take charge of its department of tests, which includes all the routine testing work of the company, supervision of its research work, and the scientific standardization of its various stock lines of paper. Mr. Clark has for many years been Chief of the Paper Laboratory of the Bureau of Standards, Department of Commerce. His resignation from this post becomes effective March 20. He is to be succeeded by A. G. Durgin, who for the past two years has been Mr. Clark's assistant at the laboratory, and was formerly Professor in charge of courses in Pulp Manufacture at the University of Maine.

According to report current in New York financial circles, an offer of 70,000 shares of National Amine and Chemical 7 per cent. accumulation preferred stock is to be made soon by a syndicate headed by White, Weld & Co. This block of stock is said to be a part of an original issue of \$25,000,000, given in exchange for various properties merged in 1917. None of it has been offered before to the public.

The Hicks-Costarino Company, Inc., recently organized with a capital stock of \$50,000 to carry on a waste paper business, has just opened at 697-707 Kent Avenue, Brooklyn, one of the largest packing-houses in the Eastern United States. The new plant has approximately 40,000 square feet of floor space, and is equipped with the most up-to-date appliances for sorting, baling and shipping waste paper and rags. The officers of the new concern are P. Costarino, president; Daniel M. Hicks, vice-president and treasurer; A. C. Costarino, secretary, and Leonard F. Hicks, assistant treasurer. The firm of P. Costarino & Company, formerly at 110 Classon Ave., Brooklyn, is absorbed by the new company, but the firm of Daniel M. Hicks, Inc., 140 Nassau street, New York, is in no way affected.

Numerous restrictions governing the transportation of paper and paper products have been removed by the United States Railroad Administration during the past three months, and it is evident that a return to a peace basis of transportation is in progress. Few complaints of delayed shipments are now being made by jobbers and other buyers of paper.

The Japanese Tissue Mills at Holyoke, Mass., is under new management following J. Lewis Perkins' retirement last week as president of the corporation. Mr. Perkins, who has headed the concern since its incorporation in 1899, is reported to have disposed interests at a price said to have been close to \$1,000,000. Though no information regarding the new owners has been given out, it is believed that one of the largest papeterie and tissue manufacturers in the middle east, which controls the New York and New England district on certain lines of these papers and supplies, is the purchaser. Through the withdrawal of Mr. Perkins, the management of the Japanese mills has been assumed by William H. Bond and James T. Robinson. Mr. Bond is treasurer, and will direct the general management, while Mr. Robinson, who is assistant treasurer, will be general purchasing agent. Although Mr. Perkins will retire from actual paper manufacturing, he will continue to be associated with the allied paper trade by reason of his being president of B. F. Perkins & Son, a concern which manufactures paper mill machinery of various descriptions.

Recent tests made by the Forest Products Laboratory of the United States Forest Service have demonstrated the feasibility of using waste hemlock bark from paper mill operations for tanning purposes. The utilization of paper mill bark for such purposes would mean a source of income for the mill from a material which is now of little or no value. In many cases it would also be the solution of a serious problem of stream pollution.

THE BAMBOO PAPER CO., LTD.

An interesting announcement in a British journal is that the Bamboo Paper Co., Ltd., has been registered, with a nominal capital of £20,000 in £1 shares, to enter into an agreement with Thomas Nelson & Sons, Ltd., and to manufacture and deal in paper pulp from bamboo and other materials.

Technical Section

NEW MEMBERS.

There have been added to the Technical Section a number of new members of the several classes since January 1st. They are as follows:

Ewen J. Graham, Riordon Pulp & Paper Company, Hawkesbury.

C. C. Moyle, Riordon Pulp & Paper Company, Hawkesbury.

H. A. Vernet, Toronto Paper Mfg. Company, Cornwall.

W. N. Tilton, Toronto Paper Mfg. Company, Cornwall.

R. J. Sprang, Canada Boxboard Company, Montreal.

"THE MORTERUD SYSTEM OF INDIRECT COOKING AS APPLIED TO SULPHITE PULP."

The discussion of the address on this subject by Dr. A. E. Neilson at the annual meeting of the Technical Section was essentially as follows. The paper appeared in the Pulp & Paper Magazine for Jan. 30.

The Chairman, Mr. J. Stadler, said: Doctor Neilson deserves great credit for giving us a description of this process very much in detail, and it seems to me that from the description given, we could go ahead and operate the process ourselves. However, we are not prepared to do that, but we are here to discuss it. Undoubtedly there must be somebody here who knows something about the process, and we would like to hear about the good and bad points. Doctor Neilson has naturally told us all about its good points, and we would like to hear from some of those present, as to the other side of the question.

Mr. Pounsford asked: What effect does the strainer have on the blowing? In blowing the digesters, how does it affect the strainer?

Dr. Neilson replied: It does not affect it at all, because if you are blowing the cook, you are liable to blow a hole right through the digester, and the liquors will go out, but in this one the pulp is going all around the bottom of the digester; it is not making a hole in the centre. It goes over all sides and all around the area down into the bottom, but it does not stick down there. In this way we get more easy blowing.

We go many weeks without having any cleaning. When this process was first in its experimental stage, we had some trouble with it, but now we have brought the process to a point where we don't need to clean it at all, unless there is a breakdown in the acid room, and, of course, then you have to clean it, but the dirt drops down in the bottom, and can be very easily cleaned from time to time.

A number of questions were asked, and answered, by Dr. Neilson, as follows: "Do we understand that on account of the arrangement, the figures you gave for your acid was a low percentage of combined? Is that a requirement for the process, or can you operate satisfactorily with a little higher combined?"

We did not experience any trouble in making the acid. We can use the very same acid as everybody is doing now, in the mills. Some of them have a very high combined, and they must have that lower down, but if you are using an acid of one per cent combined you can bring it down through transfusion to a lower combined.

I have cooked hard and green wood, and we took it right from the woods and put it in the mill and cut it and cooked it, and we had no trouble. The acid was one per cent combined.

The Chairman continued: The members are very much interested about these figures and the saving claimed—you know, they came a long way—and the men in this country generally say, "Well, we have a doubt; we want to see." I think some of them really doubt these figures, but we are all here to discuss this thing. A little further information should be given about these figures, and now is the time to do so. There must be some good sulphite men here who want to know about it.

Mr. Crossley: I understand from the speaker that there is no relief, and if there is not, where does the saving in sulphur come in?

Dr. Neilson: We relieve the gas when the cook is finished. We don't relieve gas going up in temperature—the pressure gradually goes up with the temperature. You get the top pressure and fill the digester up with condensate with direct cooking. Of course we relieve the gases when the cook is nearly finished.

Mr. Stephenson: Dr. Neilson has not explained how that gaseous SO₂ escapes from the chips or is removed from the digester and subsequently re-absorbed.

Dr. Neilson: When you transfuse the liquor it leaves you a space in the digester, and this space will be then filled up with gas from the acid in the digester, some of which is inside the chips. We use the reclaiming system similar to what is now used in the mills.

Dr. Neilson answering questions, said: The Union people have had this since 1914, I guess, in their sulphite mill.

But another mill in Norway had it from about 1907—running; and another has had it since 1914.

No mills on this side are using it, because we have not been able to get the manufacture of the copper pipes which are needed.

The Chairman said: As far as the lower part of the digester is concerned, I think Doctor Neilson could give us some information as to whether there is any difficulty experienced with uncooked chips below the strainers.

Dr. Neilson: No. We put live steam in the bottom and it blows the chips up. What we put in there only takes a matter of a minute and a half.

I might say that this is only one construction; we have twelve constructions of strainers, and this is only one.

The shape of the strainer is according to the shape of the digester. If you have a very steep digester, we never use that one (indicating); we use that one in particular when we have a very bad shape, say, forty-five degree angle, or about that, to get easy blowing. That is the way we have done, but as a rule if the digester is of better shape, we make another construction. As I said, we have twelve different ways of fixing the strainers.

Mr. Crossley: Is this chart typical of the time of cooking? This shows fourteen and a half hours cooking?

Dr. Neilson: Yes, because we want to cook it so. It can be adapted to conditions.

I might say in answer to Mr. Brecke's question that

I saw the system at the Wayagamack sulphite mill about three weeks ago, and I got from the general superintendent the information that it was working very satisfactorily, and they had had no trouble with it at all.

The chairman asked for the experience of the Brompton Pulp and Paper Co., with the Morterud system in their sulphite mill. Mr. Bothwell and Mr. Olszen replied. It was evident from their remarks that their opinion was far from complimentary, a great deal of trouble having been encountered. A particular source of dissatisfaction was the use of defective material.

Mr. Newell, of the Dominion Bridge Co., who supplied the pipe in question, explained that they were not advised of the purpose intended nor were proper specifications furnished. Charcoal iron, pipe could not be obtained and, on the manufacturers' recommendation, they supplied good material for an ordinary piping job, but it was not suited to the conditions of use and failed.

The discussion had a decided tendency to degenerate into a personal dispute. The chairman concluded the debate ably and diplomatically by making the following keen observation: It would seem, gentlemen, it is like any machine when we start building something new. Unless the requirements are known there are apt to be some slips, and for that reason everybody ought to be very careful. The mere fact that certain pipes which were specified could not be obtained, and certain workmanship, which is an understood fact in the European shops, had not been specified in American shops, makes some difference; it always comes down to the same thing. You cannot be careful enough, because it always takes time to develop something to suit the locality and the country.

This is a European process, and it is a mistake that a great many people make to have machinery designed in Europe and built in America. Gentlemen, that will seldom work. You have a different method of doing the work out here; you have different standards of workmanship, and consequently, I would not to-day accept a machine designed in Europe and built in America. They are failures; ninety-five per cent. of them, and without making any reference to this specific apparatus, I think the Technical Section should be very careful in accepting European designs for use under our conditions.

REVIEW OF RECENT LITERATURE

A.9. The determination of hypochlorites and chlorates in presence of each other. I. M. Kolthoff. Utrecht. Pharm. Weekblad 55, 1289-95 (1918). In determining HOCl by oxidation of As_2O_3 , the drop test on KI-starch paper can be avoided by direct use of indigo, or better still methyl red in the acid solution. The titration can be carried out in either acetic acid or HCl solution, without any interference by chlorates. Contrary to the HOCl determination, indigo is a better indicator than methyl red for titrating chlorates. The best procedure is to add 10 cc. of 29% HCl and 10 cc. of sample to 25 cc. of 0.1 N As_2O_3 ; boil gently for five minutes, and titrate the excess of As_2O_3 with 0.1 N KBrO_3 . In commercial powder, loss of available Cl is more often due to faulty packing or shipping allowing the material to get wet, than to fraudulent adulteration. This can usually be decided by determining both the hypochlorite and the chlorate con-

tent before shipping and after receiving. The loss of available Cl will appear as increase of chlorate. The strength of Cl is readily determined by the method described above for hypochlorites.—Chem. Abs.

A.12. Pine rosin. W. Fahrion Chem Umschau Fete, Oele, Wachse, Harze 25, 3-5 (1918). The rosin examined was obtained by dissolving residues of pine in NaOH and acidulating the filtrate with HCl . Petroleum ether dissolved only 2.1% ether less than half; it was soluble in alcohol and in aqueous NH_3 up to a very small residue. The residue from extraction with petroleum ether could not be extracted with ether because the undissolved matter hardened together. The separation of the rosin in three different parts; A soluble in petroleum ether, B soluble in ether, C soluble in alcohol was made in the following way; the rosin was dissolved in NH_3 , the solution covered with ether in a separatory funnel, then an excess of HCl added and the mixture was immediately strongly shaken. The residue from the evaporation of the ether solution was treated in the same manner with petroleum ether. A amounts to about 6%, is clear yellow, bright, amorphous, viscous mass that becomes soft by mild heat, acid value 139.2; iodine value (Wijs), 82.6; (calculated for abietic acid $\text{C}_{20}\text{H}_{30}$ 185.4 and 166.9 respectively); A, then, does not consist exclusively of free abietic acid. The neutral compounds present were estimated to 21.2%; these could be decomposed with alcohol alkali into 4.8% acids and 16.4% unsaponifiable matter. The rosin acid liberated from the neutral compounds was a hard rosin analogous to colophony, saponification value 221.2. This number, much too high for abietic acid, together with the low iodine value, led to the conclusion that A contains derivatives of hydroxyabietic acids soluble in petroleum ether. B is a yellow, amorphous powder; becomes soft and plastic while boiling with water; holds obstinately water back that can be removed while evaporating with alcohol. The water-free residue is completely molten, when cooled solidifies to 2a red-brown mass similar to colophony, not viscous and easily pulverable; iodine value 68.4. B is an auto-oxidation product of A or of abietic acid. C is an amorphous hydrated powder, melts more difficultly than B; iodine value 57.9. C also is probably an auto-oxidation product of A. Composition of the rosin; 4% H_2O , 5.8% A, 34.5% B, 55.7% C.—Chem. Abs.

D.O. Cellulose substitute, A. N. Anderson and C. Vig. Norw., 28, 771, Apr. 29, 1918. Wood pulp is ground; the long fibres are separated and treated chemically at a comparatively low temperature and finally passed through a crusher.—Chem. Abs.

E-2. Simple method for determining sulfur dioxide. G. W. Jones, J. H. Capps and S. H. Katz, Mining Sci. Press 117, 415-8 (1918). The authors describe in detail, with graphs and an illustration, a method and apparatus for determining SO_2 by I titration for the use of engineers working in the field. The apparatus is strong, cheap, easily replaceable, and assembled into a case designed for portability. The method is not accurate beyond 2 significant figures, but has a range of about 10 parts per mil. by volume to 1% or more, (as in atmosphere of pulp mill). With the aid of a table giving the effect upon the senses of varying concentrations of SO_2 , it is possible to estimate the small proportions of SO_2 without analysis.—Chem. Abs.

E-2. Alcohol from waste sulfite liquor. R. H. McKee, U.S. 1,284,740, Nov. 12. Waste sulfite liquor is subjected to the action of BaS under oxidizing con-

ditions, forming a sludge containing BaSO_4 and eliminating injurious S compounds and the sludge is furnace-d under reducing conditions to regenerate the BaS. The purified liquor is fermented with yeast.—Chem. Abs.

E-2. Dyes from waste sulfite liquor. J. Puring, U. S. 1,283,296, Oct. 29. 100 cubic centimeters of 30° Be waste sulfite liquor is mixed with 10 grams of a-naphthylamine and the latter is dissolved by gentle heating. The material is then cooled and 2-25 cc. strong HNO_3 added. Intumescence results with production of a gray porous mass. A 1-2% solution formed from this product dyes wool, silk or leather directly by mere immersion, removal, washing and drying. The shade produced depends upon the proportion of HNO_3 used. With small amounts of HNO_3 , the dye gives flesh colored tints; with larger, bright yellows, and with intermediate proportions intermediate shades. In some instances additional HNO_3 may be dissolved in the dye bath itself. Different results are obtained by adding the HNO_3 in stages. E.g., if to a mixture formed from the a-naphthylamine and waste liquor, in the same quantities as above there be added 2.5% HNO_3 in successive small portions with constant stirring, a reddish brown H_2O -soluble composition is obtained. This will dye flesh color. If 2.5% more HNO_3 be added, the composition assumes a violet color and will dye wool and silk brown from a neutral bath. On adding 5% acid, a violent reaction takes place and the mass intumescences. On drying, this product forms a blue-black powder, dyeing silk and wool a yellow-brown. Using 20% of HNO_3 in all, a brownish yellow powder is obtained which is more soluble than the product obtained with a total of 10% of acid and which dyes wool and silk bright yellow from a neutral bath. Various dyes of somewhat similar character may be also obtained by using, instead of a-naphthylamine, either phenol, cresols, aniline benzene, toluene, or zylene. The colors produced on wool, hair, silk or leather are fast to soap, NH_4OH , soda and bleaching soda. Chromic acid and bleaching powder change some of the shades produced.—Chem. Abs.

E-0. M-O. Luting composition. S. Tamarai, U.S. 1,281,702, Oct. 15. An acid-proof luting composition, suitable for use on vessels of reinforced concrete is formed by mixing molten S 1 part with graphite 3 parts and stirring and applying the mixture after heating it to about 170°. Paraffin may also be added to the mixture.—Chem. Abs.

F-5. Digesting cellulose materials with sulfate liquor. O. G. Stage. U. S. 1,279,604, Sept. 24. After treating wood chips or similar cellulosic materials with a solution of Na_2SO_4 , NaOH , Na_2S , Na_2CO_3 in a digester, part of the black liquor is withdrawn, weak liquor is introduced into the digester to replace the liquor withdrawn, the pulp in the digester is washed by the liquor thus weakened and the liquors are well preserved under digester heat and pressure to maintain them in condition for subsequent burning without loss.

F-5. Wood cellulose, etc. Aktiebolaget Cellulosa. Brit. 116,288, May 27, 1918. In obtaining cellulose by boiling raw material such as wool with NaOH lye, the lye is subjected during the boiling to a "contact substance" having a reducing action, such as mercury. The boiler is given a thin coating of Hg once every 14 days, by filling it with 0.001 normal HgCl_2 solution. The lye used, which must be free from S, contains about

60 grams of Na_2O per liter and its strength is maintained by adding lye during the boiling operation. The temperature is 149-70° and additional pressure may be obtained by dissolving soda from the dry distillation of waste liquor in the waste lye from a previous boiling after it has been freed from lignin by CO_2 . Air may be removed from the material to be treated by drenching it with H_2O or by exhausting the boiler before admitting the dye. The used lye may be regenerated.—Chem. Abs.

H-4. Electrolytic production of alkalis and chlorine. N. Stratham. Brit. 118,355, Sept. 26, 1917. A diaphragm between an anode chamber and an empty cathode chamber allows passage of sufficient electrolyte to prevent back diffusion of NaOH . It may be faced on the discharge side with less porous material arranged so as to render the lower parts of the diaphragm less permeable than the upper parts. Uniform percolation throughout the diaphragm can thus be obtained. The body of the diaphragm may be of asbestos or board paper, and the facing of finer asbestos, incorporated with or applied to the body, and either stepped or steadily increasing in thickness downwards. Percolation takes place preferably at such rate that with concentrated brine in the anode compartment, the cathode liquid may contain about equal proportions by weight of alkali and salt, say 11 parts of the formed to 10-11 parts of the latter. A direct overflow from the anode compartment of about 100 cc. of brine per square foot of diaphragm surface may be provided for. The perforated cathodes may be sustained by perforated ribs on coverplates.—Chem. Abs.

H-5. Sulphite wood pulp. (Bleaching) V. Drewsen. U. S. 1,283,144, Oct. 29. Sulphite wood pulp from spruce, hemlock, fir or balsam wood is refined to render it suitable for the manufacture of nitrocellulose, by bleaching for 4-8 hours with an aqueous solution of bleaching powder, washing, and then boiling under pressure for several hours with an aqueous NaOH solution to dissolve and remove the oxy- and hydro-cellulose, washing, and again bleaching with bleaching powder while keeping its solubility in KOH below 7%.—Chem. Abs.

H-5 Treating lignocellulose preliminary to bleaching. A. R. de Vains and J. F. T. Peterson. Holland, 2,395, Apr. 2, 1918. Cellulose is treated with a solution of Cl water, then with H_2O alone, and finally with a slightly alkaline solution.—Chem. Abs.

K-18 Indurating and waterproofing fibre board. W. V. Lander. U. S. 1,278,943, Sept. 17. Fibre board or similar porous material is treated with a solution of rosin and petroleum residuum in gasoline to fill the pores of the material and gasoline is afterward evaporated from the impregnated material.—Chem. Abs.

K-18 Fibreboard resistant to fire and water. A. L. Clapp. U. S. 1,280,400, Oct. 1. A fire and water-resisting fibreboard is prepared by treating bark, moss, straw, or similar vegetable material with a solution of caustic alkali partially to dissolve the material, mixing the solution and residue thus obtained with wood pulp, jute or other fibrous cellulose in H_2O , reducing the fibrous cellulose and other solid constituents of the mixture to a finely divided condition, forming the stock into sheets after the addition of a metallic salt such as alum, to precipitate the dissolved cellulosic material throughout the mixture, and drying the sheets.—Chem. Abs.

PULP AND PAPER NEWS

Joseph H. Copeman, for many years financial editor of the Montreal Gazette, has joined the firm of Greenshields and Company, Montreal, and has entered upon his new duties.

Federal charters have been granted to the Herald Publishing Co., Limited, Montreal, with a share capital of \$300,000, and to the Herald Press, Limited, Montreal, with a capital of the same amount.

George Charters is superintendent of the ground-wood mill at Grand'Mere. He has been with the Laurentide Co. five years. Since last June he has been in U. S. aviation service.

A federal charter has been granted to Canadian Kraft, Limited, with headquarters in Montreal and a capital stock of \$100,000 to manufacture, export, import, buy and sell paper and paper goods of all kinds. The incorporators are F. B. Common, Geo. R. Drennan, H. W. Jackson, F. G. Bush and Mr. J. O'Brien, all of Montreal.

Herbert Sherriff, of the Hodge-Sherriff Paper Co., Toronto, has returned from the Old Country, where he has been for a long time in charge of the London office of the firm. Mr. Sheriff will leave in a few days on a business trip to the Pacific Coast and will later on return to London. He reports that the outlook for trade with the Mother Land is promising and believes that business in the export paper line will greatly expand as ocean tonnage becomes more and more available and carriage rates are reduced to normal.

A provincial charter has been granted to Lalonde Bros. and Company, Limited, with headquarters at Cochrane, Ont., and a capital stock of \$75,000. The company is empowered to secure and operate saw-mills and to enter into the business of lumber merchants and to buy and sell pulpwood and other wood products. The incorporators are R. E. Lalonde, T. A. Lalonde, J. E. Gronlx, Hilair Hayes and George E. Lalonde, all of Cochrane.

The last number of *Le Digesteur* relates the trip and services of the Grand' Mere fire department when the big fire occurred at the Belgo-Canadian plant last month. Chief Blanchette and his 17 assistants did good work, \$100,000 was a big loss, but it might have been worse. Two pictures of the fire are shown. In the same issue is a picture of a frozen wolf, weighing 140 lbs., that was trapped at the Laurentide logging camp at Lac Panage.

Geo. W. Dickson, safety engineer of the Riordon Pulp & Paper Company, Hawkesbury, Ont., recently spent two days in Grand' Mere, renewing old acquaintances. He was for a number of years superintendent of the Ground Wood Department at the Laurentide.

J. Brennan, late of the U. S. army, stationed at Cleveland, has returned to Grand' Mere. He used to be chemist for the company.

The leading officials of Canadian newsprint mills are much pleased at the announcement just made in the United States that the Federal Trade Commission has definitely refused the request of publishers to re-open the question of newsprint prices from May 1st to July 31st last, so that the only recourse left is an appeal to the judges of the Circuit Court of Appeal. Under all the circumstances it is thought very unlikely that such appeal will be taken.

The pulp mill of the Bathurst Lumber Co. shut down on March 5th. According to despatches this is due, among other causes, to slackness in the pulp market, and attitude of organized labor in the handling of the output of open-shop mills. It is not expected, however, that the plant will remain idle for more than two or three weeks, and while pulp is not being manufactured, extensive repair work is being carried out.

SEEKS MORE INFORMATION ON PULP WOOD CONCESSIONS.

In the Ontario Legislature recently, Mr. Proudfoot, leader of the Opposition, asked from the government replies to certain questions regarding the pulp wood concessions of J. J. Carriek, ex-M.P. of Port Arthur, respecting the Pic River and Black Sturgeon River limits in the Thunder Bay district, and the reason of their non-development as required in the terms of sale under which large pulp and paper plants were to be erected on the properties.

Hon. G. Howard Ferguson replied that Mr. Carriek became possessed of the concessions as a purchaser in the ordinary course of business by public tender, and the non-erection of the industries was attributable to war conditions, and the suspension of operations in the providing of electric power from Lake Nipigon.

Mr. Proudfoot does not appear to be satisfied with the nature of the replies of the Minister of Lands, Forests and Mines, and has now asked for a return of all documents covering the original sale of the limits to Mr. Carriek, agreements connected therewith or supplementary thereto, and letters and telegrams passing between the Ontario Government or any of its members or officials and Mr. Carriek or any one acting in his behalf with reference to the limits.

PULPWOOD IN SHERBROOKE SECTION.

The opinion of well-posted pulpwood men of Sherbrooke indicate that recent slackness in pulpwood movements is due to lack of ears and the fact that American mills have fair, but not large, stocks. Scarcely 25 per cent. of the demand is filled, and farmers are selling regularly. There is no indication of lower prices, while some producers are said to be holding their stocks in anticipation of a better demand and higher prices.



The Markets

CANADIAN MARKETS.

Toronto, March 17.—It is now four months and more since the signing of the armistice and those who thought the bottom would drop out of the paper market and that prices would tumble, have another guess coming to them. Only on three lines have there been any reduction and these are so slight that no material effect has been experienced. Kraft paper was reduced a quarter of a cent a couple of weeks ago, white blanks came down about twenty per cent. owing to the attempt of American mills to flood the Canadian market, and this week there was a drop of ten per cent. in toilet paper. Tissues remain the same and a fair amount of business is being done, the mills keeping busy.

The paper box manufacturers have been notified that the present prices will continue another three months. This will give stability to this branch of the industry as manufacturers can go ahead and carry out contracts and make such purchases as required to do the work in hand. Manufacturers of fancy stationery are busy and envelope factories are active.

With the advent of spring printed matter is going out in large quantities and advertising is increasing with all the papers which makes business better as the weeks pass. In the rag market trade in all lines is good, but in the paper stock arena things are quiet and there has been a slight drop in No. 1 white envelope cuttings and white blanks, while on No. 1 print manilas there has been a small advance. The scrap paper market is dull owing to the board mills not buy heavily. Stocks with jobbers are getting lower all the while and buying is therefore on the increase. Deliveries are good and sheathing and roofing papers are going to be in big demand owing to the promising building activities.

Book mills are busy and with more settled labor conditions coupled with transportation facilities that are satisfactory, there is not any cloud on the horizon. Prices are holding firm and in some cases have been advanced, particularly on the cheaper lines supplied to publishers on which, in the past, the manufacturers contend they have not been making any money. There is in the trade a disposition to move slowly yet, for conditions regarding the future are by no means settled

and a sane policy is being adopted by all mills who are not loading up with large quantities of pulp or other raw materials.

The sulphite pulp business is still quiet and demand is only fair. Export continues good and prices remain the same as quoted. Some mills have shut off a portion of their output until the situation improves and are at present marking time. Newsprint mills are busy and the amount of news exported continues to run high. It is expected that the figures of export for the fiscal year, which ends the 31st of this month, will show that the export business done has been well over a hundred million dollars. While there is a good deal of talk about a revision of the tariff and manufacturers in other lines are somewhat uneasy about the aggressive attitude on the fiscal question assumed by the farmers of the West, the pulp and paper trade is not vitally concerned. Any changes following low tariff sentiment which comes from the prairies is not likely to affect this industry adversely. The fact that two large companies are doubling their capital stock, one to undertake further extensions in the pulp and paper line and the other to embark in this enterprise shows that the future is viewed with confidence. The activity of pulp and paper stock on the various exchanges is an encouraging sign and before the end of the present year it is estimated that many millions will be invested in the industry. Paper companies are acquiring additional timber and pulpwood limits which is a splendid omen that things are very bright so far as the discerning ones can see for the further advancement and expansion of the industry in the Dominion.

The hearing of the newsprint investigation will likely be resumed in Ottawa at the end of the present month when further statements covering costs on some of the leading plants will be presented. It is then probable that Mr. Pringle will name a new figure for the product which will go to the Appeal Tribunal. When the peace terms in Europe are signed, the manufacturers believe that the paper investigation will then be called off and no further attempt at arbitrary regulation of prices be proceeded with. It is understood that the counsel for the publishers of periodicals and trade papers have entered a protest against Auditor Clarkson not proceeding with his investigation as to

Scandinavian American Trading Co.

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Have an extensive
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When you have
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the cost and selling price of sulphite. It will be remembered that Mr. Clarkson was to audit the books of the Riordon Co. to ascertain the figures with respect to the cost of producing sulphite pulp. The output of that company is taken very little by Canadian book mills, most of which have their own plants and, no matter what figure the Riordon Co. placed on their product it could not have any appreciable effect on the price of the finished product of the book mills. However, it is now thought, in view of the protest that has come to hand, Controller Pringle may call upon the Riordon Co. to furnish him with a statement covering their costs and selling price for the period under review without requiring an examination of the company's books by the auditor, unless, following the receipt of such statement, a verification by the auditor as to any disputed return may be thought advisable.

Rag and Paper Stock Prices.

No. 1 white envelope cuttings	.....\$5.25
No. 1 soft white shavings	.....\$4.00
White Blanks	.....\$1.15
Heavy Ledger Stock	.....\$2.50
No. 1 magazine	.....\$1.50
No. 1 book stock	.....\$1.30
No. 1 manilas	.....\$2.10
No. 1 print manila	.....\$1.20
Folded news	.....75c
Over-issue news	.....90c
Kraft	.....\$4.00
No. 1 clean mixed papers	.....60c
No. 1 shirt cuttings	.....\$11.50
No. 1 unbleached cotton cuttings	.....\$10.00
No. 1 fancy shirt cuttings	.....\$9.25
No. 1 blue overall cuttings	.....\$9.25
Bleached shoe clip	.....\$9.25
Unbleached shoe clip	.....\$8.75
White cotton hosiery cuttings	.....\$9.75
Light colored hosiery cuttings	.....\$7.50
New light flannellette cuttings	.....\$9.25
No. 2 white shirt cuttings	.....\$9.00
City thirds and blues (repacked)	.....\$4.00
Flock and satinettes	.....\$2.10
Tailor rags	.....\$2.00

NEW YORK MARKETS.

New York, March 15.—Quietness continues to be the outstanding characteristic of the paper market. Still, there has been some improvement in the demand this week for at least certain kinds of paper, and the tone of the market has ruled generally steady. Prices have sagged in just a few instances as a result of the efforts of manufacturers to secure business, and consumers have shown slightly more willingness to buy at the reduced quotations. There has been no concerted price cutting, however. On the contrary, producers are quoring at levels in close proximity to those named for some time past, and there is no disposition shown to lower prices to any material extent.

Reports have it that export demand for paper has increased. It is said on high authority that mills are looking considerable business of this character, which would indicate that foreign buyers are at last coming into the market. Anticipations have been and still are that once export trade opens up an extensive business be done. There seems no reason to doubt that consumers in South America will have to secure their supplies of paper in this market for at least the immediate future. European producers

are not yet in a position to supply them, and the probabilities are it will be some time before they are. Then, too, if reports can be believed, prices prevailing on the other side of the Atlantic, in England for instance, are so high that it is hardly probable that consumers in the southern republics will buy there when they can get such paper as they require in the United States at far more attractive prices.

The newsprint market is well maintained. Demand is fairly active, and shipments by mills are very close to the current production. In fact, talk has been heard in the trade to the effect that some manufacturers are having difficulty in supplying all of their customers. This would seem to be hardly true, however, for when all is said and done, the present consumption of print paper is certainly no more than normal, if on a par with that customary for this time of the year. With the fixed price question again to be taken up on March 21, publishers naturally are not purchasing any more paper for the moment than they actually need, which condition holds the demand down below proportions it would possibly assume were the situation different.

Book papers seem to have taken on more life. Demand has expanded to a degree and there is a moderately voluminous business passing in practically all lines of book stock. Prices are steady, with manufacturers insistent on full quoted figures. Buying interest in tissue papers also is fairly active, and the situation in this grade of paper is marked by firmness. No. 1 white tissue continues to sell at around \$1.15, while No. 2 white and manila tissue are quotable at between \$1.00 and \$1.05. Wrappings are quiet and quotations have been lowered slightly. Consumers are absorbing only small quantities as their needs develop, and mills are forced to be content with scattered orders for limited tonnages of paper.

Fine papers are moving in little, if any, better volume. Buyers of this class of paper also are restricting the size of their orders to a noticeable degree, and the great bulk of sales involve unimportant quantities. Prices are maintained, however.

The board market is quiet and easy. The recent drop in prices has induced few buyers to enlarge the scope of their operations, and current business is of narrow proportions. There has been no further reaction in values, and indications are that prices have touched bottom, at least for a time. Manufacturers assert that they have lowered quotations to the lowest possible point under prevailing production costs, and that if they reduce prices further there will be no profit in their operations.

GROUND WOOD.—The situation in mechanically ground wood is characterized by dullness. Consumers evince little or no desire to accept the offerings of sellers, claiming to have their present requirements covered by contract supplies, and being unwilling to buy ahead. Quotations are mainly nominal. No. 1 pulp, freshly ground and of an all-spruce variety, is available at \$26 to \$27 a ton at the pulp mill, but in the absence of actual transactions, the question arises as to whether supplies could be secured at lower figures or not. Indications are that some producers could be induced to sell for less, for there is no denying that the average grinder has surplus stocks on hand and is anxious to move a portion of his holdings.

CHEMICAL PULP.—Very little fresh activity has been noted in the chemical pulp market. Demand is

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NEW YORK CITY

at a low ebb, and dealers and importers report having scant success in their efforts to persuade consumers to buy irrespective of the prices quoted. It is difficult to say just what market prices are. So few sales have come to light that it is an almost impossibility to gauge values. Domestic bleached pulp has sold at 5.50c a pound at the pulp mill, and quotations on this one grade are fairly well established at this level, though the probabilities are supplies could be purchased in some quarters for less. Newsprint sulphite is quotable at a nominal range of 3.25 to 3.50c per pound, while domestic easy bleaching is priced at 4.25 to 4.50c and domestic craft at 4.50 to 4.75c. Foreign pulp is firmly held despite the light demand from consuming sources.

RAGS.—Papermaking rags are moving into mill channels only in a limited way. There has been some demand in evidence this week for the better grades of material, but aggregate buying has involved no great quantities and prices have just about held their own. Repacked thirds and blues have been bought in the local market by manufacturers at 3.25c per pound delivered mill, while No. 1 old whites repacked have sold at 5.75 to 6.00c delivered, and street soiled whites at around 3.15c. Roofing rags are in a dormant position. Felt mills are doing practically no buying and prices are gradually moving to lower levels. No. 1 satinets have sold to mills at 1.60 delivered, and probably for less. New rags are sought only in small lots, yet prices are fairly well maintained, owing chiefly to the fact that dealers are holding stock for better values which they expect to prevail later on.

PAPER STOCK.—Moderate activity in the low qualities of waste paper has existed this week, and there has been a slight firming up of prices on one or two grades. No. 1 mixed paper has featured the demand and sales to mills at 40c per hundred pounds have been recorded, which is a shade more than consumers have been prone to pay recently. Flat fold-news has sold at around 60c f.o.b. New York, No. 1 manilas at 80 to 90c, and over-issue newspapers at 75 to 80c. Flat stock has moved in better volume at a price basis of between 1.35 and 1.45c New York for heavy books and magazines. Shavings have ruled dull and prices are nominally at ranges of 4.75 to 5.00 f.o.b. New York for No. 1 hard whites, and 3.75 to 4.00c, for soft white shavings of No. 1 grade.

BAGGING AND ROPE.—Scrap bagging continues to be largely neglected by paper manufacturers, and few sales of sizable volume have been made during the last few days. Consumers claim to have their needs covered for a time, and evince practically no desire to add to their holdings regardless of the prices asked. About 2.50c a pound New York is the figure generally quoted by sellers on No. 1 scrap bagging, with roofing quoted at 1.50c. Old manila rope is fairly steady in price under a moderate call from consuming plants. Strictly No. 1 rope is selling to mills at between 4.75 and 5.00c, a pound New York.

Apropos of the use of cellulose for food and fodder in Europe, we note that French wheat may contain as high as 2.48 per cent cellulose, Australian 2.76 and Manitoba 3.02. The ratio of maximum to minimum cellulose content is 1.63 to 1.

Mr. F. A. Sabbaton and his mother have left for a few weeks' rest in the South.

ONE HUNDRED DOLLARS FOR A TRADE-MARK.

The Canadian Pulp and Paper Association will give one hundred dollars, in addition to paying the cost, for the best design for a trade-mark or insignia, suitable for use as a label to be attached to the various products made by its members, submitted on or before April 15, 1919.

The proposed purpose for the trade-mark is to increase the use of Canadian-made paper by enabling purchasers readily to identify such paper as distinct from that made in countries other than Canada.

It is proposed to use the accepted design as the basis for an extensive Advertising Campaign to familiarize the public with facts concerning the paper-making industry of Canada.

The accepted design must comply with the following requirements:—

(1) It must bear the words "Canadian Pulp & Paper Association."

(2) It must lend itself to reproduction in various dimensions suitable for placing on ordinary boxes of stationery and for packages containing up to 1,000 pounds of paper or more.

(3) It must be suitable for reproduction in black or in two or more colors, as may be determined.

(4) On account of the beaver having already been adopted as a paper trade-mark in Canada, no design containing a picture of a beaver can be considered.

The competition is open to anyone living in Canada not directly connected with the Canadian Pulp and Paper Association. It is open to employees of any paper company in Canada, among others.

Contestants are invited to submit designs and to attach thereto their own value for the drawing. The \$100 prize will be paid in addition to the price set by the contestant for the accepted design. All other designs submitted will either be paid for at the contestant's own valuation or returned to contestant.

Designs will be judged on their originality, simplicity, distinctiveness, attractiveness and suitability for the purpose proposed.

The award will be made by an independent committee of three competent judges.

All entries should be addressed to

A. L. DAWE,

Secretary Canadian Pulp & Paper Assoc.,

304 Shaughnessy Building,

137 McGill Street,

MONTREAL.

PRICE BROS. BOUGHT PULPWOOD.

Shareholders of Price Bros. and Co., Ltd., are in receipt of a circular offering them the rights to subscribe to share in a syndicate composed of Sir William Price, the president, and certain of the directors, who purchased a valuable property last fall.

The property is situated on the Sault au Cochon River (flowing into the St. Lawrence about 180 miles below Quebec on the north shore), and consists of about 850 acres of timber limits under lease from the Crown, about 1,350 acres of freehold land, including the bed of the river, and two water-powers. The limits are exceptionally well timbered and are estimated to contain over 3,500,000 cords of pulpwood.

The river is good for driving purposes, and the property, according to the circular, is a valuable one.

MATTAGAMI PULP & PAPER CO., LIMITED

BANK OF HAMILTON BUILDING - TORONTO, CANADA

Specialize in

Strong Easy Bleaching Sulphite Fibre

Manufactured from Clean Sound Spruce

New Modern Mills at SMOOTH ROCK FALLS, ONTARIO

Bleached and Unbleached WOOD PULP of every description

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Incorporated

18 E. 41st Street

New York, N.Y.

Established 1886

Coupled with the 290 miles of limits, the 700 acres of freehold land, and the water powers owned by the Price Bros. organization, this forms one of the most valuable properties in all the province.

Mill Notes.

The new iron and brass foundry is now in full operation, and making satisfactory progress.

Experiments which have been made in connection with a new stock regulator are practically completed, and the results achieved all that was hoped for. Steps will be taken to protect this by patent rights.

OTTAWA NOTES.

The arrival of two auditors from the staff of the Government's official auditor, Mr. Geoffrey Clarkson, at the John R. Booth plant early this week, together with the general preparations that the mills are making for the hearing on March 31, featured the newsprint situation at Ottawa up to early this week.

The auditors will likely spend the greater part, if not all of the week at the Booth plant. Reports from mill counsel indicate that they are busy preparing their arguments and cases for the hearing at Toronto at the end of the month. As is to be naturally supposed, advance information as to the nature of the arguments could hardly be expected, and beyond the statement that they were preparing for what they hoped would be the last probe session, there was no further announcement.

Conditions with the local mills remained good so far as labor and output went. The mild weather continued to save the mills a considerable coal bill, as contrasted with the severe winter of last year.

Mr. J. de L. Tache, King's Printer, stated to the writer late last week that there was the possibility of the strike of the printers and pressmen tying up the demobilization of the Canadian forces and also seriously interfering with the carrying out of the operations of the Canadian Civil Re-Establishment Commission. The forms used for both these, as well as many other Government departments have in the past been printed at the Printing Bureau, and their non-issuance since the strike began bears promise of seriously handicapping the work of several Government departments and bodies.

During the first part of this week some interesting figures to the paper and publishing trade of the Dominion were given by the King's Printer in reply to a statement which appeared in the press, supposedly having come from the strikers' publicity committee. It shows that the increased expenditures have not been out of proportion to the great increase in the work of this department since 1908.

The various matters in dispute regarding the transportation of electric power in which the Ontario Power Company figured some time ago, has been referred to the Exchequer Court for disposal by an order in council issued by Hon. Arthur Meighen, acting Minister of Justice.

This step was taken at the suggestion of Sir Henry Drayton, controller of the production and distribution of electrical energy, and the dispute arises out of the proportionment of power to munitions factories. In this connection it will be remembered that the power of the Ontario Paper Company manufacturing newsprint for the Chicago Tribune was diverted to munition factories.



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Sale of Pulpwood Lands in Northern Ontario

The Lake Superior Corporation and Algoma Eastern Railway Company are open to negotiate for the disposal of certain lands

Approximately 682,000 Acres

situated for the most part in that section of Northern Ontario known as the Clay Belt and comprising the Townships of Storey, Langemarck, Dowsley, Nassau, Shetland, Staunton, Orkney, Magladery, Caithness, Rykert, Doherty, Whigham, Coppell, Newton, Dale, McOwen, Frater.

The lands in question are accessible to the Algoma Central, Trans-Continental, Canadian Northern, and Canadian Pacific Railways, and should be of particular interest to pulp and paper makers, also to settlers, in view of their agricultural possibilities.

General information will be furnished and plans exhibited at the office of Mr. Alex. Taylor, secretary of the Lake Superior Corporation, 1423 Bank of Hamilton Building, Toronto, or at the office of Mr. G. A. Montgomery, vice-president of the Algoma Eastern Railway Company, Sault Ste. Marie, Ont.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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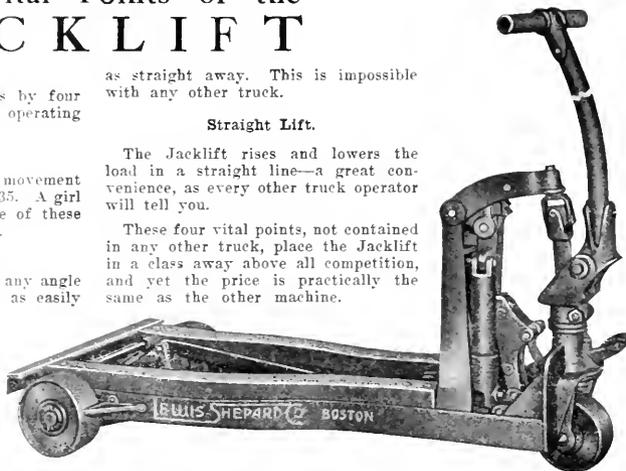
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EDITORIAL

KEEP YOUR EYE ON ENGLAND.

The editor was recently talking with a representative of a big paper mill in Quebec, and this gentleman remarked on the outlook for Canadian goods in England. He said that while to outward appearances the English embargo on Canadian pulp and paper had been removed, that this was not actually the case. The fact of the matter is that some time ago Atlantic shipping, which had been exclusively used on munition and other war service, was partly released, to the extent of about 30 per cent for handling ordinary freight. The proportion was later increased to fifty per cent available for this purpose. It seems that recently there has been such an enormous demand for shipping to carry over food stuffs and other absolutely necessary materials that large quantities of manufactured goods have piled up at the seaports, so that instead of freight condition being easier, it is next to impossible to obtain cargo space. This, of course, all operates to the advantage of the British paper mill, as far as Canadian paper is concerned, as it shuts out imported goods from the home market. It also operates to the advantage of the Scandinavian pulp manufacturers because, while competition for ocean shipping keeps freight rates high from Canada to England, the almost empty bottoms that are returning from Scandinavian ports to England tend to keep those rates at a very low point, thus greatly favoring a low price and easy delivery for Scandinavian pulps in the British market. There is, of course, no complaint from the British papermaker about getting too much pulp, and there seems to be no fear that there will be a very serious shortage of these materials.

Advices from England indicate that Swedish pulpwood is four times the price of pre-war days, but that production of pulp may be expected to be kept at from seventy per cent to ninety per cent of former figures. There appears to be plenty of pulp in the market at the present time, but grave doubts are expressed as to whether sufficient quantities will be available next year, owing to difficulties in getting the raw material. Some Englishmen would like to see Canadian mills favored to a greater extent and at the same time they would like to see Germany prevented from obtaining Scandinavian pulp until Allied countries are supplied. The point of this is clear when it is recalled that Germany made a great proportion of her 800,000 tons of pulp from wood im-

ported from Russia and Finland, sources of supply that will not again be available for some time. Germany formerly imported in the neighborhood of 70,000 tons only of Swedish chemical pulp, while she exported considerable quantities to France and Belgium.

At a recent meeting of paper men in England it was voted to arrange for a deputation of two representatives of the papermakers, two from the wholesale stationers, and two from the trade unions, to wait on the president of the Board of Trade or the Prime Minister with the idea of continuing restrictions on imports of paper until British mills were again in working order.

A number of other resolutions were discussed and adopted by the papermakers in regard to the handling of the paper situation. One of the interesting provisions was an agreement to a proposal in a recent French memorandum that the paper mills devastated by the war in France, Italy and Belgium should be restored as far as possible by recovering the machinery, or merchandise carried off by the enemy and requisitioning in the enemy's country all machinery or merchandise proper to replace that which has been found to be destroyed or carried off.

It was recommended that the government be asked to prevent the dumping of foreign papers in the British market at prices below the current price in the country of origin.

It was remarked that steamers on the return journey from Sweden to America could carry pulp for much less than the railway freight from any Canadian mill. It was also stated that England had been largely dependent upon Scandinavia for pulp because there was not enough in Canada.

The meeting was quite of the opinion that something in the way of rationing paper raw materials should be undertaken by the Allied countries, but it was remarked that any action should be discussed with the neutral countries also interested. It seems that this idea came originally from the French commission on raw materials. English and French paper makers are coming together in a spirit that will make for close co-operation, and it is certainly to be hoped that the Canadian Trade Commissioner will keep in close touch with developments in this line, or it is likely that a considerable amount of business will go to other countries that can be just as well supplied by Canadian mills.

BOY OF TEN HURT IN MILL.

A Montreal paper records the award of \$4,000 to a man in that city whose son lost an arm by having it crushed in a machine. The accident happened the day after the boy was employed last July.

The simple statement of such a condition of affairs as will permit the possibility of such accidents is enough to arouse the fighting spirit in any man who has children or remembers childhood experiences. A condition of affairs that makes it economically necessary for immature children to seek factory employment is no credit to the nation, province, or city where it exists. There has been on the books of the province of Quebec a law forbidding the employment in factories of children under 14 years, and the present is only one of many cases where the law is disregarded or evaded by either an industrial concern or the child, or his parents. It hardly seems possible that a boy of ten could misrepresent his age by four years, and get away with it, even though his statement might be sustained by the lie of a parent. The fact that the boy was injured should draw attention to the fact that he was employed illegally, although the report of the judge's decision makes no mention of that phase of the situation. The company who employed the boy settled with the father by paying \$4,000, although the original claim was \$10,000. A sad feature of the case is the length of time, more than seven months, that it took to reach a settlement. Families whose children are obliged to seek employment when they should be playing ball or marbles are not as a rule able to carry extra burdens due to such accidents without considerable hardship.

It has been emphasized in these columns that there is something decidedly wrong with a society that forces children into industry because of the insufficient wages of parents when some employers have more than they know what to do with. The recent action in England of the mine workers and the government might well be taken up as a precedent for every intelligent civilized community. If working men are to be rewarded for the fruits of their labor according to the service they render, and if the reward is not sufficient to allow them to live with some degree of decency and comfort, then it is time that industry changed its ideas on the rate of reward and put a higher value on service. There are unfortunate cases where children must assist to some extent in supporting a family, but this should not be necessary in any case until the age of 14 at least, so that the children will have the benefit of at least the elements of an education, a basis on which further progress could be made if there is sufficient natural ambition. In order to provide such an opportunity for many unfortunate children who are without a home supporter it will doubtless be necessary to institute some form of mother's pension. Such provision has been

made by Manitoba and Saskatchewan, and is supported by those in other provinces who put the welfare of our people, and particularly the children, above the petty disputes of party politics. As "D. H." recently argued in the Montreal Star, it is a case of subsidizing a mother's care and presence in the home instead of paying for day nurseries, orphan asylums, and reformatories. It seems beyond chance of doubt that such a move would really be a saving to the state and would result in an immeasurable improvement in the quality of citizenship as well as the future industrial power of our people.

Let us hope that Quebec and the Dominion will not be satisfied with the simple enforcement of a law which is admittedly only a partial remedy, but that our legislators will go to the root of the matter and make it easier for children to remain at school and mothers to remain at home.

REFORESTATION IN GERMANY.

George Renwick, correspondent of the Daily Chronicle, is back in Germany after being absent during the war from what was once a very familiar country. He writes in an interesting way to New York and Montreal papers of the appearance of things in the country which has been to us as a closed book for four years. A curious mixture of the use of war substitutes and foresight in making provision for the future is shown in these words, which are quoted from his despatch:

"Ever and anon woods slain for war purposes presented themselves in the sandy, cut up landscapes, pictures sadly like the scenes on the old western front, where the havoc was that of artillery. Often there was evidence that while the Germans had been cutting down their trees they had also been engaged in re-forestation. This necessary work had not been forgotten in wartime.

"In the compartments of the train the leather coverings to the cushions had disappeared, as also the leather window straps. The substitute for leather is some cunningly woven paper substance, out of which numerous articles are made, such as bicycle saddles and tablecloths. But the same old polite conductor was there, and he had been honored by being allowed to keep his red species of Sam Brown belt."

PLEASE, PARLIAMENT, SAVE DAYLIGHT.

Unless Canada is to be numbered among the backward, reactionary nations, Parliament will have to hurry with a daylight saving bill. Without it there will be great disappointment throughout the Dominion, and great confusion in international time relations. Let the people set their clocks ahead, anyway.

Canada—The World's Papermaker.

By J. NEWELL STEPHENSON, (From The Grain Growers' Guide, March 12, 1919.)

From Port Alice on the farthest shores of Vancouver Island, to Murray St. Annes, on Cape Breton, there stretches a string of more than one hundred pulp and paper mills. It has been the writer's good fortune to visit a majority of them, and to get a direct appreciation of what this industry means to the Canadian people. The mills are located more or less in groups, conveniently situated to wood and water power or transportation facilities and markets. In the former class are the mills of British Columbia, those near Cochrane and Ottawa in Ontario, at the head of the Saguenay, and along the St. Maurice River in Quebec. In the second class is the most congested group in Canada, the twelve mills in a distance of six miles along the old Welland Canal, and the rather scattered group centering on Montreal. Isolated mills are found promiscuously through Eastern Canada. There are, at present, no pulp or paper mills in Alberta, Saskatchewan, or Manitoba, largely because available sites lack transportation facilities and are too far from markets. It is altogether likely that the future will see a growth in population and an extension of railways in the prairie provinces that will justify the erection of mills to develop the resources of wood available in some parts of them.

The permanent and fundamental industries of a country are those which are founded on natural resources.—Apparent exceptions exist in countries like England, which manufacture raw materials into finished articles. It is true that cotton, silk, wool, metals, ores, paper pulp, etc., are imported, but England has quantities of coal and a supply of excellent and intelligent labor. Canada's natural resources, especially in power and raw material, are so abundant and varied as to make the Dominion almost self-sufficient. Fields, forests, fisheries and mines hold untold possibilities for the wealth and welfare of our people.

Among our permanent manufacturing industries, the production of pulp and paper and pulpwood is easily first. A recent estimate by the Dominion Statistician puts the money invested in this business at \$186,374,905. These figures were based on 1917 reports, and there have been a number of developments since then, so we may safely say that \$200,000,000 is invested in the manufacture of pulp and paper in Canada. A considerable amount of this has come from other countries, principally England and the United States, although Belgian interests are also represented in Canadian mills. Statements of monetary investment in this particular industry are likely to be misleading, as they often fail to take an important fact into account, and one that makes this industry, more than any other, probably, of national interest. It is this: With very few exceptions the manufacture of paper in Canada, and without exception the manufacture of pulp and the production of pulpwood, depends on the forest resources of the Dominion. These forests are for the most part owned and controlled by the people of Canada and administered through Federal or Provincial Governments. The various forestry departments realize that wood

is a crop grown on forest land, the same as wheat is on the prairie, and advantage of this is taken to provide a permanent source of income to the people, usually by selling a license to cut pulpwood and charging so much a cord for all wood taken off. An unfortunate feature of the situation is that some people think their interest ends with the collection of the fee and give little heed to the necessity of taking such precautions in the matter of fire protection and cutting regulations as will insure the permanence of this source of income. It might be mentioned here that wood from settlers' clearings has been and will continue to be an important source of supply to the pulp mill. Settlers' wood is also important in that it makes up a considerable proportion of the pulpwood exported, since embargoes have been placed on such wood cut on Crown lands. The idea of this restriction was to encourage the erection of mills in Canada, and has succeeded remarkably well. It is largely on wood imported from Canada that many United States mills depend for raw material. They bought about a million cords last year. Without this they would probably have to come to Canada to build.

Interest in Water Powers.

There is an intimate connection between forests and water powers, and the pulp and paper industry of Canada is deeply interested in both. If the forest is likened to the back-bone and frame of the industry, then water power can be called the muscles, man power the brains, and such raw material as coal, sulphur, lime and chemicals the food that is fed into the vital organs represented by the mills with their extensive and varied equipment. A peculiar balance exists between trees and rivers. The wood is required by the mill for raw material, the river is required in most cases to furnish cheap transportation of the wood to the mill and, when harnessed to turbines and generators, to furnish power and light. But, if the wood is not properly taken from the forest, not only is the future growth prevented or perverted, but freshets and floods may be encouraged as seriously to jeopardize the value of the river as a source of power.

Canada may well be proud of her water powers, and even more proud of their development for the service of the people. The pulp and paper industry has no small part in this country. About one-tenth of Canada's available water power is developed, and of this amount one-seventh is used in the manufacture of pulp and paper. Only electric power companies have developed a larger amount, used principally by public service concerns. Only the United States has a greater total amount of water power developed, and only Norway has a greater amount developed per capita than has our own country.

In regard to sources of other supplies it may be said that when it becomes a necessary national policy fully to develop every natural resource, the pulp and paper industry will be among the leaders in their utilization. Coal is consumed in large quantities, and we have large deposits of coal and peat. Sulphur is

imported from our neighbor to the south, but we have plenty of sulphur in the form of pyrites if it ever becomes economically feasible or politically necessary to make use of it for this industry. Limestone we have in abundance and there are some good veins of sandstone for making pulp grinders.

These things are mentioned to show that the growth and development of the pulp and paper industry must have a wide effect on the development of every natural resource in the country, for must we not have food for the workers, and all kinds of material and machinery for them to work with? Does this not mean business for the woodsman, the farmer, the spinner, the weaver, the mechanic, the railroad man, the merchant and the banker?

Ministers to the Daily Life of Canadians.

Let us look at the industry now from the other side and see why it is necessary to our daily life, for this is not the day for unnecessary things. The fact that it assists, directly and indirectly, in the development of our natural resources, and that it employs 25,000 Canadians in mill and yard, and approximately as many more in the woods, and pays more than \$20,000,000 annually in wages is not sufficient reason for its existence. It must, and does, serve the people. One can realize the importance of the industry in this respect by trying to imagine what life would be without the newspaper and the magazine, without books and printed music, without letters of friendship or business, without roofing paper to keep rain from the settler and his stock, without building paper to protect his home from the wintry blast, and wall board and paper to make it attractive, without the paper bag for coffee and sugar, wrappings, boxes and cartons for food and clothing and other things, or special papers that minister to numerous daily needs. It is impossible to conceive of such a condition, so we may safely assume that the paper mill has a real place in our national life.

With one or two minor exceptions, Canada makes every kind of paper product that Canadians require, and, as we have seen, there is a lot to spare. There is at present no mill making blotting paper, and none that makes true parchment paper, nor is there any that manufactures vulcanized fibre. These few instances by no means exhaust the list of pulp and paper products that could and should be manufactured in Canada. It is to be hoped that our expanding export trade and more intimate relations with other countries will foster such development, possibly by attracting capital and workmen from abroad when our favorable situation as regards raw materials, power and other items is more widely known. Expansion of our industries, especially those based immediately on our natural resources is greatly to be desired, and can confidently be expected. It should, however, not outrun the demand or a period of stagnation will result, which is worse than insufficient growth. At present the pulp and paper industry is in a very favorable condition, and prospects for healthy growth could not be better. Canada needs more home-made paper of several varieties, and the world's markets are short of the principal wood-fibre products, such as newsprint, which no other country is so well equipped to furnish.

Pulp and paper are not only important in the way they contribute directly to the needs of the people of Canada, but perhaps in even a greater degree, though indirectly, by bringing money into the country in

payment for the enormous exports of this industry. With the decrease in exports of munitions, pulp and paper mills will soon be exporting more goods than any other manufacturing industry in Canada, and bringing in money that is urgently needed to pay for the machinery, materials, etc., that we buy from abroad, particularly from the United States. At the present time the account of the people of Canada with the people of the United States shows an excess of imports over exports, of \$220,574,402 for merchandise only during the nine months to Dec. 31, 1918. The effect of this on every-day business transactions, from the payment of a magazine subscription or premium on an insurance policy to the purchase of a threshing machine or flour mill equipment, is felt in some degree by every Canadian. The paper mills, which buzz and clatter day and night, are busily trying to pay off this mortgage on Canadian industry. One hundred million dollars is a lot of money, but that is the value, at the present rate, of pulp and paper exported by the mills of Canada every year, and this will go a long way toward offsetting our adverse trade balance.

This is an appropriate place to notice that 15 Canadian companies making newsprint produced 752,000 tons in 1918 (some of them operating only a part of the year), as compared with 690,000 tons in 1917, an average daily increase of about 200 tons. The excellent condition of the mills and the ability of their management is shown by the fact that they produced 97.7 per cent. of their maximum capacity. The total capacity of the 16 mills is now more than 750,000 tons per year. Of the total production of newsprint the United States took over 690,000 tons, valued at more than \$34,000,000, and considerable quantities were shipped to Australia and other foreign markets. Canada's export trade in wood pulp is already large and is growing rapidly. Much of the pulp made in the Dominion is further converted to paper and boards, in which form it is sold. This is appreciated from the statement that newsprint paper contains approximately 80 per cent. of ground wood and 20 per cent. sulphite pulp.

Export figures for the first seven months of the current fiscal year show a total of \$57,245,135, a gain of \$14,873,782 over the corresponding period in 1917, and of \$28,864,533 over 1916, or more than double. Following are the figures for the seven months' period:

Paper and manu- factures of . . .	\$13,272,977	\$20,912,832	\$25,538,881
Pulp, chemically prepared . . .	7,264,142	11,455,040	18,817,444
Pulp, mechanical- ly ground . . .	3,219,440	4,524,581	2,908,275
	<hr/>	<hr/>	<hr/>
	\$23,756,559	\$36,892,453	\$47,264,600
Pulpwood, unman- ufactured . . .	4,624,033	5,478,900	9,980,535
	<hr/>	<hr/>	<hr/>
	\$28,380,592	\$42,371,353	\$57,245,135

Neutral and enemy countries have suffered serious losses of trade in paper and pulp, and what is more important to us is that the kinds in which they had the largest dealings are the very ones that can best be supplied by Canadian mills. Much of the trade offered during the war could not be accepted because of shipping difficulties, but a considerable amount of our products found their way to new markets, and

it is altogether likely that many former customers of Scandinavian, German and Austrian mills have found that Canada has the goods, and will continue to trade with us. Our export horizon includes South America, South Africa, Australasia, India, the Orient, to some extent Great Britain and Southern Europe, and especially the United States. The spread of education is extending the demand for paper for newspapers, books, and correspondence material. With a far-sighted forest policy and capable management of mills, the pulp and paper industry of Canada has a most promising future, and can be relied on to hold the premier position among the manufacturing industries of the Dominion.

While paper has been substituted for many things, no substitute has been found for paper.

NEWSPRINT HEARING POSTPONED.

The next session of the Canadian newsprint inquiry will be held on April 9th, instead of March 31st. The reason for the change is on account of the staff of the official Government auditor, Mr. Geoffrey Clarkson, having failed to complete the audit of the mill books in the "re-investigation" to bring the late costs up to date. The hearing will be at Ottawa.

The long and short of the whole business is, as the situation at Ottawa early this week indicated, that the sixty-nine dollar price may be carried into April, or perhaps right into May. This is the result of an investigation which in the House of Commons last week was admitted by Sir Thomas White, Acting Prime Minister to have cost \$75,000. And what has it yet accomplished beyond protecting the newspaper publishers?

AMERICAN PUBLISHERS HAVE CANADIAN EVIDENCE.

During the proceedings before the Federal Trade Commission in Washington, March 21st, for a re-opening of the price-fixing order, George W. Wickersham, for the publishers, made an urgent plea for a rehearing of evidence as to the price which should have prevailed from May 1st, 1918, and since, on the ground that evidence produced by Canadian authorities showed that the manufacturing costs had declined from that time, instead of increasing.

Henry A. Wise, counsel for the manufacturers, reviewed briefly the history of the proceedings, and contended that no sufficient grounds had been shown for re-opening the case. As to future price-fixing, Mr. Wise contended that any new price fixed could only be made applicable from the date of its fixing, quoting from the agreement the provision that the price fixed was to remain in effect "until a new price was fixed." He maintained that no new price could be made retroactive, either to August 1st or any other date. (In this contention, Mr. Wise was subsequently upheld by Mr. Walsh, counsel for the Commission).

Commissioner Murdock said that the Commission had not been granted the necessary funds for new proceedings.

Mr. Walsh, the Commission's legal adviser, said that if the Commission went ahead without having the money duly appropriated, any tax-payer was at liberty to sue out an injunction and stop the proceedings.

Commissioner Fort read a statement from Chairman Colver, announcing his withdrawal from further proceedings having to do with newsprint price-fixing on the ground that he had been subjected to criticism because of his connection with certain newspapers interests.

DUBUC SAYS HE DIDN'T.

A Toronto financial man, who has for some time been in touch with the affairs of the North American Pulp Company, informs the London Free Press that the deal which has been pending for some time whereby the International Paper Company was to obtain control of the former's stock has been finally consummated. It is understood that the International has secured the whole of J. E. A. Dubuc's holding in the N. A. P.

Mr. Dubuc told the Pulp & Paper Magazine that this is the first he heard of it.

W. C. ZIEMAN, GENERAL SUPERINTENDENT.

It is with the very greatest of pleasure that we have to announce the appointment of W. C. (Bill) Ziemann to the position of General Superintendent, an appointment which we are sure will be heartily endorsed by every employee in the plant. Mr. Ziemann was born in Neenah, Wis., and started his papermak-



ing career with the Great Northern Company, going through the various stages up to machine tender, being at present twenty-six years in the trade. In 1909 Mr. Ziemann went to the M. & O. Mills at Port Frances as machine tender, and was assistant to the late Mr. John Ross from 1911 until Mr. Ross met with his fatal accident in this plant, December, 1917. At Mr. Ross' death Mr. Ziemann was appointed Superintendent of the paper mill, and now, after a thorough test, and having proved himself capable of holding down the bigger job, his appointment as General Superintendent has just been announced. — Abitibi "Broke Hustler."

The Whitby, Ont., Gazette, says: A new paper is predicted for Orillia, which already has three newsy weeklies. The proposed paper, it is said, will be a "try-weekly," with the emphasis on the "try."

WOODPULP PRODUCTION IN 1917-1918.

Comparative figures of the woodpulp industry for the years 1917 and 1918 have just been compiled by the Federal Trade Commission. Included in this summary are statements from manufacturers, received in response to an inquiry sent out by the commission as to the probable effect of peace. The consensus of opinion is that there will first be a lull, after which conditions will materially improve.

The attached sheet is a tabulation of the summary of stocks, production, pulp used in the same establishment producing it, and shipments of pulp for the year 1918 compared with 1917. Manufacturers were instructed to report all tonnage on an air dry basis. The mills have been classified for convenience into eight principal groups according to the kinds of pulp made. Many of the pulp mills were not keeping permanent records in 1917 and the first half of 1918, and in such cases estimated figures have been used. Some mills making several grades appear in more than one group so that there seems to be a duplication in the number of mills and machines. The total mills and machines, however, represents the actual number of mills and machines covered by the 1918 reports to the Commission with all known duplications omitted.

Imports and Exports of Woodpulp and Other Paper Stock.

The imports and exports of woodpulp and other paper stock for the year 1918 compared with the year 1917 were as follows:

	1918.	1917
	Net tons.	Net tons.
Exports of rags and other materials		
Imports of chemical woodpulp (total)	393,706	398,768
Unbleached sulphite	252,357	248,173
Bleached sulphite	16,757	41,036
Unbleached sulphate	120,775	107,933
Imports of groundwood pulp (total)	185,426	279,072
Exports of domestic woodpulp	23,594	38,853
Imports of paper stock other than woodpulp (total)	29,386	20,977
Exports of rags and other materials made from vegetable fibers	16,459	16,312

The principal imports of chemical woodpulp consists of unbleached sulphite and sulphate from Canada. Before the European War Norway, Sweden and Germany furnished a large proportion of the chemical pulp imported.

The 1918 import of mechanically ground woodpulp were 93,646 tons less than for 1917. Exports of domestic woodpulp were 15,259 tons less than for 1917.

Imports and exports of paper stock other than woodpulp includes rags and vegetable fibers. Imports for 1918 were 29,38 tons as compared with 20,977 tons for 1917. Exports were 16,459 tons as compared with 16,313 tons for 1917.

In connection with the commission's statistical service the following inquiry was submitted to domestic pulp manufacturers:

"In what way and to what extent will the return to peace conditions affect the manufacture of marketing of pulp?" Many manufacturers stated that they could not answer the question. The majority of those who replied were of the opinion that after a lull conditions would be good. Some stated also that export trade would become a factor.

One manufacturer summed up the future outlook as follows:

"We believe peace conditions will mean greater stability, though possibly temporary stagnation." Another replied, "It is expected there will be a gradual increase in the number of workers available and less difficulty in obtaining materials and supplies. There is no present demand for pulp, but eventually, it is anticipated there will be a good demand extending over a considerable period."

Conditions in the pulp industry depend directly upon the paper industry.

Annual reports from domestic manufacturers of woodpulp showed the following results by grades for the year 1918 compared with 1917:

The pulp used and the pulp shipped during each year represents only pulp produced in the establishment using or shipping same.

Note.—A slight variation will be noted between the monthly reports and the annual reports in the matter of the stock on hand for each grade at the end of the year 1918. This variation is due in part to corrections received from the mills and for the further reason that a few of the mills reporting on the monthly reports were not in operation during December and failed to forward to the Commission a report of their stocks.

The above figures do not include reports from several small mills that had gone out of business or discontinued operations before the end of 1918. This tonnage would probably not amount to more than a small fraction of a per cent of the total tonnage for each grade as shown in the table.

CANADIAN FIRE LOSSES.

Fire losses in Canada during the month of February amounted to \$1,091,834, compared with \$3,915,290 in January, 1919, and \$2,243,762 in February, 1918. The loss of life through fire totalled 26 in the month under review, as compared with 87 a year ago.

Kind of Pulp	No. of Mills	No. of Grinders or Digesters	FINISHED PULP -- TONS -- AIR DRY BASIS									
			On hand first of year			Production for year			Shipped during year			On hand end of year
			1916	1917	1918	1917	1918	1917	1918	1917	1918	1917
Ground wood pulp	162	1,299	144,567	112,145	1,303,403	1,447,068	1,239,222	1,314,773	82,512	98,873	131,176	145,567
Sulphite, News Grade	62	245	21,546	13,634	744,594	744,470	645,794	636,858	102,841	99,700	17,905	21,546
Sulphite, Bleached	30	139	12,140	4,130	464,525	467,085	256,407	269,347	236,052	219,668	4,240	12,140
Sulphite, Easy Bleaching	6	22	1,491	438	80,730	85,081	52,897	55,156	21,072	28,910	1,451	1,451
Sulphate, Mitscherlich	7	47	1,752	1,147	74,799	78,751	45,966	50,441	29,096	27,705	1,489	1,752
Sulphate Pulp	19	64	1,284	421	167,438	106,431	100,552	86,770	63,680	20,792	4,490	1,284
Soda Pulp	28	195	6,526	6,082	343,611	398,624	204,411	225,239	142,391	172,947	3,395	6,526
Other than wood pulp	6	14	172	231	12,892	11,999	10,204	5,952	2,020	6,100	252	172
TOTAL OF ALL GRADES	305	1,442	130,544	132,234	3,212,396	3,371,569	2,552,119	2,644,536	625,670	674,723	165,153	190,544

Soda Pulp Manufacture

By E. SUTERMEISTER, S. D. Warren Co., Westbrook, Me.

PART V.

In Part I, Mr. Sutermeister discussed the preparation and composition of cooking liquor and the apparatus and materials employed, with illustrations; in Part II, the recovery of lime, with analyses; the principles and practices of cooking operations, with curves; in Part III, mill practices with data relating to woods employed; modified processes; and by-products of cooking; in Part IV, digesters, with diagrams; circulation and steam consumption; comparison of rotary and stationary digesters.

Discharging or Blowing Digesters.

As already mentioned rotary digesters are discharged by blowing down pressure, removing the man-hole covers and emptying the contents by revolving the digester. In this case the charge drops directly into pits or tanks with false bottoms in which it is washed until free from black liquor. This time consuming operation is eliminated in the case of vertical digesters by blowing out the entire charge under full pressure through a pipe connected with the bottom of the digester. This pipe must be erected without sharp bends in which the stock might become plugged and it must be so arranged that it drains completely to one point at which a valve is placed to draw off any water or liquor which may have collected in the pipe through condensation or leakage. If this is not done the hot digester charge coming in sudden contact with the cold liquor in the pipe is likely to cause bad hammering and possibly breakage of the pipe. For the same reason the blow-off pipe is warmed up before each blow by turning live steam into it for about ten minutes. The size of this pipe must be ample to permit the rapid discharge of the digester contents. For a digester holding 15 cords of wood a pipe eight inches in diameter is of sufficient size to allow the charge to pass in about fifteen minutes when the cooking pressure is 100-110 lbs. Under these conditions the velocity of the stock in the pipe is about 2940 ft. per second. This very high velocity together with the sudden release of pressure helps to disintegrate the charge into fibres, for up to the time of blowing the greater part of the chips doubtless retain their original shapes in spite of the fact that they are thoroughly cooked.

Different digesters often act quite differently on blowing, some discharging much cleaner than others. This is due at times to the shape of the inner false bottom, at other times to the size of the digesters—10 ft. digesters have been found to blow cleaner than those 12 ft. in diameter—and at other times there is no discoverable reason.

The pipe through which the stock is blown discharges into some sort of a separator which allows the steam to escape without loss of fibre. The principle on which these act is that of centrifugal separation. The stock enters at the top tangentially at high speed which causes it to pass around the separator

close to the walls while the steam escapes to the central portion and thence out through the ventilator at the top. A well designed separator of this sort will handle the discharged stock with absolutely no loss of fibre. Such a separator is shown diagrammatically in Fig. 16 while Fig. 17 is a photograph of a separator during the blowing of a digester. Even with this tremendous outrush of steam there is no loss of fibre.

In discharging a digester in this way there is a very large volume of steam wasted. In the case of a digester holding 15.6 cords of wood it has been calculated that, after deducting the heat which will remain in the brown stock, there are at the instant of blowing off 41,200,000 B. T. U., which is equivalent to 34,400 lbs. of steam. This would occupy, at atmospheric pressure, a volume of 925,000 cubic feet. To recover this heat by means of an exchange heater would require a very large equipment for the entire amount would have to be handled in about 15 minutes. The cost of such an equipment has heretofore been considered prohibitive, and very few attempts have been made to reduce this waste. Another possible means of saving part of this heat would be to blow down part of the pressure from the digester before discharging its contents. The steam thus relieved could be utilized in heating water in any of the usual types of heaters. This would be much simpler than attempting to reclaim the steam when the entire charge is blown off, but it would increase the time necessary for each cook. It might also make it more difficult to get uniform cooks, as it would be necessary to stop steaming sooner in order to make up for the extra time of cooking while blowing down the pressure, and it might prove hard to estimate the amount of cooking which would take place during this last period especially if the rate of blowing down varied.

Washing the Pulp.

The stock as discharged from the digester contains beside the fibre all of the alkali originally added as well as all of the material dissolved by the alkali during the cook. The analysis of three samples taken during entire time of blowing gave the following results

	#1	#2	#3
Fibre, washed and bone			
dry	11.38%	8.15%	7.32%
Water	73.72 "	76.48 "	81.51 "
Alkali as Na ₂ O	4.14 "	4.06 "	2.92 "
Organic matter and CO ₂	10.76 "	11.31 "	8.24 "

As the substances other than fibre amount to over half the dry weight of the wood used some idea may be obtained of the quantity of material which it is necessary to remove by washing. The purpose of this washing is two fold, to free the fibre from unbleachable material and to recover the dissolved alkali for further use. The first of these objects demands that the washing be very thorough, for a very

little black liquor seriously interferes with the subsequent bleaching; while the second requires that as little water as possible be used, since in the recovery process all the water must be again evaporated.

The most general method of washing the stock is in pits with false bottoms into which the stock is discharged from the rotaries or from the blow tank in case of digesters. These wash pits are of such size that each will hold the entire contents of a digester and they consequently vary in size according to the size of the digesters employed. A wash pit of convenient size for a 15-cord digester would be about $19\frac{1}{2}$ ft. in diameter and 12 ft. deep; this will allow plenty of room for flooding the stock with wash water. The false bottom is formed of perforated sheet metal securely fastened to steel beams beneath. The space below the false bottom amounts to about six per cent of the total volume of the tank. In some plants a false bottom is not used, but instead the liquor is drained off by perforated pipes laid across the bottom of the tank, the perforations being on the under side so that there is no dead space to

hold back black liquor. This arrangement is economical of tank space, but does not give so much drainage surface as a false bottom. In the centre of the pit is a large opening which can be tightly closed by means of some type of valve, so that black liquor will not leak through during the washing. This opening connects with a spout through which the washed fibre can be sluiced to the storage tank for unbleached stock. Fig. 18 gives an idea of part of a modern wash pit room, and shows the spouts which deliver the brown stock from the blow tanks on the roof.

When the pits are filled from the blow tank it piles up at the point where the spout discharges and before washing can be started it must be levelled off. This is done by men using long handled rakes or hoes. During this operation it is frequently to be observed that the color of the stock at the instant it is turned over is a light golden brown, but that it darkens almost immediately on exposure to the air. In this connection it is interesting to note a statement by Griffin⁶ that the liquor in the digester at the

⁶J. Am. Chem. Soc., 1902, 24, 235-238.

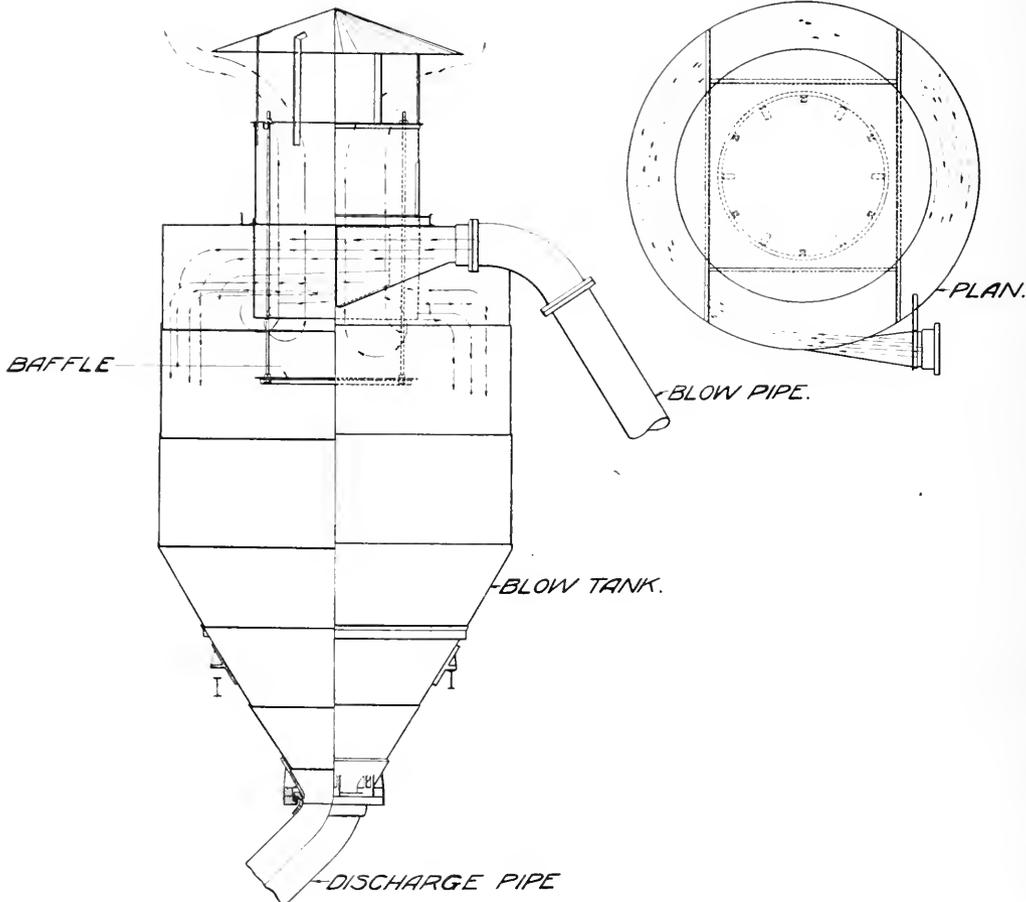


Fig. 16.—Vertical and Horizontal Sections of Blow Tank.

end of the cook is light rose in color. This darkening of the liquor is probably due to oxidation of materials similar to pyrogallol in their nature, and it brings up the question of whether fibre of a lighter color or of easier bleaching qualities could not be prepared by washing the stock without previous exposure to air. This was tried out on a small scale, and it was demonstrated that if the stock could be washed without permitting it to come in contact with air it would bleach appreciably easier than otherwise. Unfortunately any process of washing in the digester is too time-consuming to be practical, and moreover a very large volume of water must be used since the chips retain their original shapes, and the black liquor can be removed from them only by diffusion. The only valuable result from these tests is to indicate that in handling the black stock previous to washing it should be exposed to air as little as possible.

Other tests along slightly different lines have demonstrated that if the black liquor is not washed out promptly the bleaching qualities of the fibre suffer quite seriously. In one case where 24 hours elapsed before the washing was started, and where the stock became cold in the meantime the bleach required was 14-15%, while part of the same cook, washed immediately after discharging, gave the same color, with only 9% of bleach. That this was not entirely due

to the exposure to air was proved by making a cook in a small digester and allowing it to cool completely and stand several days before opening. In this case the bleach required was far above the normal for fibre produced under the same cooking conditions. The influence of time of standing in contact with black liquor is quite probably responsible for some of the unaccountable variations in the color of the bleached fibre, for it is a more or less frequent occurrence that a pit of stock cannot be washed promptly

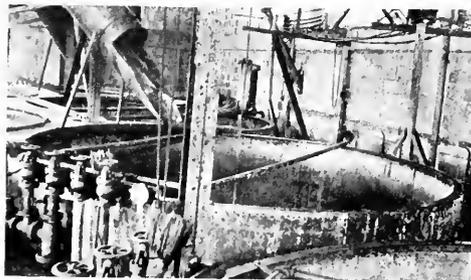


Fig. 18.—Wash Pits showing Spouts from Blow Tank.

ly because of an accident or because the evaporators or calciners are not able to take care of the liquor rapidly enough.

In the actual washing of a pit of stock, as soon as it is levelled off it is flooded with weak black liquor. This is run on through a series of perforated pipes so placed across the top of the wash pit that a uniform distribution of the liquor is obtained. As soon as the stock is flooded the strong black liquor is started draining from the bottom of the pit, the application of weak liquor being continued at the same rate as the strong liquor drains off. This strong liquor is collected until it reaches a specified test, which varies in different mills, but is quite frequently 5° Be., and constitutes the liquor going to the recovery plant. After it reaches 5° Be. it is considered weak liquor, and is then used for flooding another pit of stock for the production of strong liquor. As the pits are usually washed in rotation this weak liquor is not collected in a receiver, but is pumped directly onto the pit from which the strong liquor is being taken. When the weak liquor tests 0° Be., or even less than this if the temperature is high, it no longer pays for evaporation, and it is allowed to go to waste. The washing is usually finished with clear water, and when the washings draining away are nearly colorless the washing is considered finished, and the fibre is ready to go to the stock chest.

This method of washing depends for its efficiency on the judgment and skill of the workmen, as well as the frequency of the tests and the accuracy of the hydrometer used. In some plants a continuous indicator is arranged so that the color of the liquor tells at a glance how the washing is progressing. Fig. 19 gives the general idea of this device. A small portion of the strong liquor flowing from the wash pits is continually diverted through the glass U-tube A, and from thence to the strong liquor tank. A second U-tube B, of the same bore as A, is placed within the first as shown. B is filled with the liquor of the



Fig. 17.—Blow Tank during Blowing.

minimum strength to which it is desired to collect the strong liquor, and when the liquor in A is of the same color as that in B, the collection of strong liquor is stopped. Obviously this same device could be used in judging the strength of the weak liquor.

In washing systematically as above outlined it is doubtless true that the bleaching properties of the fibre suffer somewhat since the application of black liquor cannot but be detrimental even though only to a slight extent. From the standpoint of ease of bleaching the ideal way would be to flood the brown stock at once with hot water, and to complete the washing in that way. This would, however, require a very large volume of hot water, and would deliver a very weak liquor to the recovery system. The strength of the strong black liquor, when washing

depends on the amount of stock which it contains, upon the depth which it occupies, and upon a number of variable factors. Even when using the same wash pits and handling the same amount of stock in them each time there is enough difference in the rate at which the liquor drains through to cause considerable variations in the time required. The following data from tests of cooks in a 15-cord digester give the approximate times of washing when the stock occupies a depth of 8-10 feet in a pit 19½ ft. in diameter.

	hours.
Time for collecting strong liquor	4—7
Time for collecting weak liquor	5—8
Time for completing the wash with fresh water	2—3

Total net time 11—18

It is frequently impossible to finish the washing without interruptions, and on the average it requires about 26 hours to complete a cycle, including the time from the start to blow the digester until the fibre is all sluiced into the stock chest. The time of washing can be considerably shortened by reducing the depth of the stock in the pits, as for instance by dividing a charge between two pits, but the volume of water required is much increased, which means a weaker liquor going to the evaporators, and there is frequently a greater loss of alkali in the final washings. With smaller digester units the washing can usually be done in less time. One mill producing six tons of fibre per cook claims to wash in 10 hours while in the case of units of two tons of fibre the washing time is about 5 hours.

The volume of liquor obtained in washing depend to some extent on the way the stock drains. If the strong liquor drains off uniformly over the entire surface of the pit a comparatively small volume of high strength will be obtained, but if it drains unevenly, due to places which are less easily penetrated by the wash water, a considerably larger volume of lower average strength will be collected before the desired test is reached. For large scale cooks the volumes obtained per ton of pulp are about as follows:

Strong liquor	1600—2100 gals.
Weak liquor	1750—2220 gals.

The water required for the final washing varies considerably more than do the volumes of strong and weak liquor taken off. This is because there is no special test to show the completion of washing and the judgment of the different wash pit men as to when the stock is ready to bleach does not always coincide. Another reason is that no particular emphasis is usually placed on the saving of water so that the final washing is often continued much longer than is absolutely necessary. Assuming that the volume of final washings drawn off equals the volume of fresh water run on the water necessary for washing a pit containing nine tons of fibre was found in one careful test to be 5675 gals. From continuous records taken during a period of two months in another mill the average volume of the final washings was found to be 15,890 gals. for each nine ton charge.

This final washing carries off a small amount of alkali and a little fibre. By passing the water through screens or save-alls a considerable part of the fibre

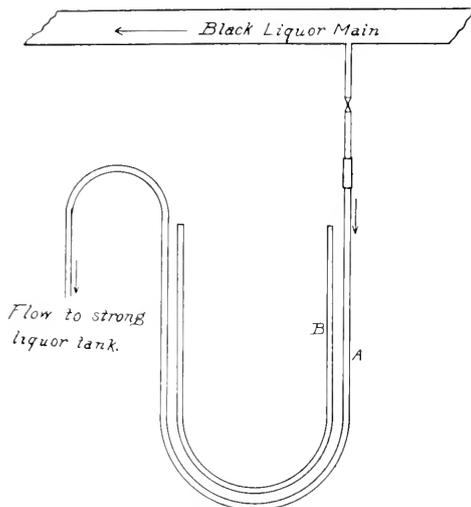


Fig. 19—U-Tube for Washing Tank.

systematically is from 8 to 12° Be, according to the strength of the cooking liquor and the amount of condensation from the steam. The advantages of producing a liquor of this strength for the evaporators far outweigh any injury to the bleaching properties caused by the use of black liquor in washing.

The use of hot water in the final washing is generally recommended, and many have the idea that fibre washed with hot water bleaches more easily than that washed with cold water. Several very careful tests on different grades of fibre have proved that in some cases this is true, although the saving of bleach in favor of hot washing is not very marked. In two tests fibres washed with hot water were found to bleach with 10 and 8.7 per cent of bleach, while parts of the same cooks washed with cold water required 10.3 and 9.0 per cent respectively to give the same color. While this saving is hardly appreciable there is a distinct advantage in using hot water, and that is the saving in time required for completion of the washing. This alone, in the case of a plant working up to its capacity, is sufficient to justify the use of hot water.

The time required for washing a pit of stock de-

can be recovered, but the alkali, being in solution, is lost. The alkalinity of the wash depends on the care exercised by the men in charge and very considerable variations occur; average samples taken during a long period contained from 0.437 to 3.519 grams per litre of total alkali as sodium carbonate. Greater variations than this doubtless occur in individual pits. From tests covering two months' continuous operation it was found that the loss of alkali averaged 11.4 lbs. of sodium carbonate per ton of fibre produced; this amounts to about 0.8% of the alkali added to the digester.

A greater loss of fibre than that in the final washing occurs in the strong black liquor unless the latter is put through some kind of a save-all. The reason for this loss is found in the false bottom and the method of washing out the fibre by means of a heavy stream of water. This drives some fibre through the false bottom, where it collects and cannot be entirely washed out no matter how prolonged the washing of the pit bottom. When this pit is again filled with brown stock and the black liquor drains through it washes out this fibre with it, and carries it along to the recovery system unless a save-all is interposed. The loss of fibre from this cause and in the final washing depends on the depth of stock in relation to the area of the false bottom; in pits 19½ ft. in diameter where the stock occupies a depth of 8-10 ft. the loss has been estimated to be about 0.05% of the total fibre. While this appears small it amounts to considerable during the year, in this particular case to somewhat over 12 tons of fibre.

Black Liquor.

As already noted more than half of the weight of the dry wood is dissolved during the cooking and all of this material is present in the black liquor. Because of the severe action of the caustic soda the products of the reaction are much degraded and the isolation of pure substances is very difficult. There have been recognized, according to Griffin and Little,⁷ sodium formate, acetate and oxalate together with dark colored products resembling umic acid. The proportion of acetate is sufficiently great so that it has proved an attractive subject for study from a recovery standpoint, and a patent was taken out in 1891 by Higgins⁸ for the preparation of acetates by charring the dried liquor at 350°. Difficulties in the separation and purification of the products have, however, prevented the successful application of any such schemes.

Because of the very complicated nature of the materials present no accurate analysis for organic constituents is possible, and at best only a general idea of their properties can be obtained. The inorganic constituents are capable of closer estimation and have been studied in detail by Griffin⁹, who gives the following data for a black liquor derived from a soda cook of poplar wood, all figures being based on the weight of total solids at 100° C.

Silica (SiO ₂)	0.11%
Oxides of iron and alumina (Fe ₂ O ₃ & Al ₂ O ₃)	0.02 "
Lime (CaO)	0.05 "
Potash (K ₂ O)	0.69 "

Soda (Na ₂ O)	25.69 "
Carbon Dioxide (CO ₂)	3.43%
Acetic acid	9.89 "
Organic matter extracted by naphtha boiling below 60° C.	1.56 "
Organic matter extracted by ether	7.14 "
Organic matter extracted by absolute alcohol	28.26 "
Organic matter extracted by water	17.02 "
Total alkali by titration of incinerated residue	44.25 "

Another sample of black liquor from a soda poplar cook, but derived from a different source, was studied to determine the distribution of the alkali among the different constituents. This sample contained total alkali equivalent to 65.5 grams per litre of sodium carbonate, combined as follows:

As acetate	25.8%
As carbonate	8.0 "
As hydroxide	13.3 "
With insoluble organic acids	13.5 "
With soluble organic acids	39.4 "

The proportion of caustic soda present in this liquor is much less than that necessary according to Klason¹⁰, who states that 40% of the total alkali must remain unused in the black liquor, and that even if the wood is present in great excess 25% of the original alkali will be found unconsumed. In contradiction to Klason's statement were the results of cooks of poplar wood with varying amounts of caustic soda; if caustic amounting to less than 9.0% of the weight of the wood was used none at all was present in the black liquor, while from this point onward an increase in the caustic used gradually increased that present in the black liquor, though even when 18% was added fully 90% of it was used up and that remaining in the black liquor amounted to only 1-4 grams per litre. Even under practical working conditions no such large proportion of caustic remains unused, as the following analyses of black liquors from various kinds of woods will show.

Kind of wood	Black liquor		Caustic remaining Percent on bone dry wood
	Grs. per litre NaOH	Percent causticity	
White maple	13.1—14.3	21.1—21.4	5.0—5.1
White birch	8.7—21.5	12.2—28.8	2.9—7.7
Black Gum	20.2—22.1	33.3—35.6	9.8—10.4
Beech	10.6—17.6	18.5—21.3	4.6—4.8
Poplar	6.4—18.1	15.3—29.1	3.5—8.0

The problem of the commercial utilization of black liquor is one which has attracted a great deal of attention, and many plans have been proposed for its solution. A sizing agent for paper has been prepared from the humic matter precipitated from it by acids but the pinkish color which it imparts limits its use to colored papers. It has also been proposed to make a wood stain from the humus or to nitrate it for the preparation of brown to yellow dyes. It can also be used as a base for the preparation of brown sulphur dyes, but it appears to possess no special advantages over the materials generally used, nor do the dyes prepared from it seem to be of a very desirable shade. None of these uses would make any appreciable impression on the enormous quantities of black liquor

⁷Griffin & Little: Chemistry of Paper Making, p. 16.4

⁸Higgins: Eng. Pat. 13409 (1891).

⁹Griffin: Jour. Am. Chem. Soc. 1902, 24, 235.

¹⁰Christiansen: Natronzellstoff, p. 51.

produced annually, and in all of them the recovery value of the soda would be lost in precipitating the organic matter.

Along a very different line was the attempt to recalcinate the black liquor by adding lime. The apparatus was so arranged that the liquor was taken from the digester, pumped through the recausticizer and back to the digester, and the result was a material shortening of the time of cooking. The precipitate formed by the action of the lime on the black liquor was very bulky and gelatinous, but while difficult to handle it did not form an insurmountable obstacle. This scheme was in actual use for some time and was finally abandoned because the increased digester capacity was found to be unnecessary.

It has been proposed by Rimman¹¹ to precipitate the humus by means of carbon dioxide, adding salt to the liquor in order to obtain a granular precipitate which can be readily handled. After drying, this precipitate is destructively distilled and alcohol, acetone, etc., recovered as by-products. In an investigation of the action of carbon dioxide on black liquor, made some years ago by the writer, it was proved that only 9.2% of the total organic matter could be precipitated by this means, and that after very slight washing this precipitate is again readily dissolved by hot water. Veitch and Merrill¹² working with a black liquor from southern pine, found that 44% of the total organic matter could be precipitated by carbon dioxide, and an additional 11% by acetic acid. It is evident that the kind of wood largely influences the results obtainable by this method.

The most logical method for obtaining useful by-products from black liquor appears to be by destructive distillation of the entire material rather than of the precipitated humus as outlined above. This process has been investigated by many experimenters, among them Rimman, who has taken out U.S. patent 1,196,290, thus apparently acknowledging its superiority to the method employing humus. Such a distillation can be carried out at a comparatively low temperature, it not being necessary to go above 400°C (752 F.), and Lawrence¹³ even claims that 255-300°C gives the best results. The products obtained are, non-condensable gases, methyl alcohol, acetone, aldehydes, amines, phenolic oils, tar and the retort residue containing the alkali and carbon. If lime is added to the black liquor before distilling the acetone content of the distillate is increased, while if no addition of alkali is made the alcohol is present in far the greater amount. The gas given off during the distillation has a high heating value, and while the amount produced is not enough to supply all the heat necessary, yet it would be of material assistance in reducing fuel costs. This process, or slight modifications of it, is being tried out on a semi-commercial scale by numerous plants both in America and Europe and the prospects of success appear to be excellent.

¹¹Rimman: Papier Ztg., 1911, 3489.

¹²E. S. Dept. of Agri., Bureau of Chem. Bull. No. 159.

¹³Paper, Apr. 18, 1917, p. 18.

(To be Continued.)

F. J. Fellowes, manager of Eaton's printing department, Winnipeg, is at present in Eastern Canada, visiting the mills.

MATTAGAMI CO. MAKING GOOD PROGRESS.

The fiscal year of the Mattagami Pulp & Paper Company of Toronto, whose plant is located at Smooth Rock Falls, Ontario, closed at the end of March. The results will be satisfactory to the shareholders, who will receive the annual statement about May 1st. The company for the first eight months of its fiscal year, which ended December 31st last, showed net earnings of \$334,580, of which \$101,793 was written off to reserve for depletion of timber account, this reserve standing at \$200,000 at the end of 1918. This deduction left funds available, equal to three times the bond interest. During the year the company's third digester was completed, and all that is required to increase the capacity of the plant to 45,000 tons per annum is the installation of a new drying machine, which is now being proceeded with.

W. C. EDWARDS CO. TO BUILD PAPER MILL.

Consideration has been given by the private bills committee of the Commons to the bill increasing the capital stock of the W. C. Edwards and Company, Limited, Ottawa, from \$4,400,000 to \$8,000,000. Mr. H. P. Hill, solicitor for the company, explained that the purpose of the increase in capital stock is to provide funds to enable the company to go into the pulp and paper business, in addition to the lumber business. He intimated that the company will build a pulp and paper mill at Ottawa or Roekland, more probably at the latter place. The committee did not object to the proposed increase in capital stock, but the bill stood over because the question arose as to the necessity of rescinding former legislation affecting the company, in view of the fact that the bill before the committee includes a new by-law which may to some extent conflict with a previous act.

PUBLICATIONS LARGER; MORE ADS.

There was an increase over January in the average number of pages per copy in all editions of newspapers. Weekly magazines showed a slight decrease in the average number of pages per issue. The average number of pages of all other publications using book paper showed an increase.

There was an increase over January in the percentage of advertising to reading matter in all editions of publications using newsprint. The percentage of advertising to reading matter for weekly magazines of 16 pages and over, and the monthly magazines using book paper increased. The percentage of advertising to reading matter for weekly magazines of less than 16 pages and of semi-monthly magazines showed a decrease.—Federal Trade Commission.

The Woodlands section of the Canadian Pulp and Paper Association is issuing a bulletin written by Mr. Ellwood Wilson, chief forester for the Laurentide Co., Grand Mere, Que., on the burning of slash. This briefly emphasizes the importance of disposing of the debris, and gives directions how it can be safely burned. The bulletin will be issued to limit holders and members of the section.

H. B. Hart, president of the British-American Wax Paper Co. of Toronto, is in England looking after the formation of a subsidiary company on the other side. Mr. Elwood is also in London. Details are not yet available, but Jas. MacArthur, who is manager of the Toronto plant, thinks the English plant will probably be in or near London.

Technical Section

CANADIAN WASTE SULPHITE LIQUOR AS A POSSIBLE SOURCE OF ALCOHOL.

Following is the discussion of Dr. Kriebler's address at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association. The address was published in the Pulp and Paper Magazine on January 30.

Dr. Bates who occupied the chair, opened the discussion:

This paper is what our friend Dawe calls "high-brow stuff," but don't be afraid to discuss it. There are a number of those present who have been interested in this subject, and it seems to me that this paper has a value as an indication of what to consider when you are studying your waste sulphite liquor. We are very apt to think of the apparatus, costs, etc., without studying our individual conditions.

Mr. Keay continued: I have been somewhat associated with the work to which Dr. Kriebler has made reference. Some of the samples were sent also to Mechanicville, where the Ekstrom process of recovering alcohol from sulphite waste liquor is used, and the results checked almost exactly with those which Dr. Kriebler recorded.

There is another process which was proposed within a year or two by Dr. McKee, of Columbia University. I don't know whether it will be interesting or necessary to go into the technical details of this, but it is opposed to the contentions of the European investigators that it is necessary to get the SO_2 out of the waste liquor before fermentation is attempted. Dr. McKee by blowing air through the liquor was able to carry on fermentation and keep the yeast alive, without entirely removing the SO_2 or acid by neutralizing the liquor.

We tried it ourselves, without much success, but we finally sent some samples to Dr. McKee, and he returned four analyses, which also checked very closely with the results of Dr. Kriebler, so it shows that there are three or four practical methods whereby recovery of alcohol may be effected.

We went into the matter very thoroughly, not exactly from a commercial point of view, but rather from patriotic motives, and we hoped to produce the alcohol when it was most needed, but fortunately the war has closed, and we trust the necessity for securing this alcohol in large quantities for munition purposes is no longer urgent.

In connection with the paper, two very important matters appear to be settled. One is that there is no great difference between the yield of alcohol from the balsam and the spruce. It was thought the difference in yield amongst the mills must be accounted for by the fact that some had more balsam in the wood. Dr. Kriebler has successfully disproved that. The second one is that it will be necessary, if one hopes to obtain a high yield of alcohol from the waste liquor, to keep the sulphite cooking temperature below or around 140 or 145 degrees centigrade.

There is a curious fact about the relationship between the fermentable sugars and the organic residue in the liquor. There seems to be a definite ratio in certain localities. One locality in Eastern Canada gave 21 per cent. of this fermentable sugar, and in

another locality it was 14 per cent—exactly two-thirds. That was not represented by one mill alone; there were three or four mills in one case.

The commercial aspect of this by-product recovery, now that the war is over, depends entirely upon what the Government's attitude will be toward permitting industrial alcohol to be duty free. For 65 per cent. over-proof industrial alcohol, the excise tax is something like \$1.23, isn't it?

The Chairman: \$2.40 per proof gallon, amounting to \$4.95.

Mr. Keay: For commercial use that throws it out of the question. No mill in Canada will be interested. If this excise tax were taken off, there undoubtedly would be a great demand for alcohol for industrial purposes, over what there is now, otherwise the matter can not be of great interest. Mr. Stadler and I estimated that on the pre-war basis, the Laurentide and the Belgo-Canadian Companies together could have produced all the alcohol that was used for industrial purposes in Canada. There should be, following the taking off of the duty, an extra demand over former requirements.

The Chairman: It might be of interest to explain the commercial phase to those present. It is true that the high excise tax has limited the consumption of alcohol in this country. I might say that a bill for the removal of the excise tax has been authorized by the Reconstruction Committee of the Cabinet, and Parliament will probably act on it in the coming session, so it is hoped that Canada will soon be allowed free industrial alcohol. That is the only hope we have of extending the consumption of alcohol through the development of the manufacturing of various products that can be made from alcohol.

Mr. Crossley: I understand the proposition has been made before the Advisory Council of Research that no foodstuffs can be used for alcohol. If that were carried out, I suppose it would increase the market for industrial alcohol.

The Chairman: I doubt very much if any Parliament would make such rigid restrictions as prohibiting the use of foodstuffs for alcohol, as Mr. Crossley refers to. It is true that the raw materials for alcohol are now imported, corn from the United States, and molasses. Sulphite liquor is about the only raw material we have in this country. It is a waste product and not a foodstuff, but I am pretty sure that sulphite alcohol will have to survive on the basis of competition, and no doubt that is the best basis.

Mr. Carruthers asked: I would like to inquire what volume of liquor would be necessary to warrant the investment for the recovery of sulphite liquors? Would only the large mills be able to engage in this, or would a, say, two-digester mill, of 50 or 60 tons, utilize it?

Mr. Berger replied: As near as I can understand it, it does not pay to recover alcohol from a very small mill, because the overhead would be too high, but it is just a matter of the price you could get for the alcohol. At the present time, I don't think it would be profitable for any mill of less than 40 tons per day to go into it. (Two Canadian mills are smaller than this).

Mr. Keay, replying to a question of the Chairman,

said: It would actually cost, at present prices, in the neighborhood of thirty cents per American gallon to produce this alcohol from sulphite waste liquor in Canada.

As a motor fuel, I understand alcohol is not entirely satisfactory—not as satisfactory as gasoline. It may be enriched by hydrocarbon oils and satisfactorily used. That is a point which must be taken into consideration, if we propose to use alcohol for this purpose. I think that, with the prevailing cost of supplies, and equipment, it would be rather discouraging for mills producing much under one hundred tons of sulphite pulp per day to undertake this alcohol recovery.

Mr. Stadler: I don't think that alcohol made from sulphite waste liquor will ever be used as fuel in this country, because the cost of production is too high, the present price of gasoline and other fuel considered, but what will probably help the recovery of alcohol from sulphite waste liquors, is the increased demand of alcohol for manufacturing purposes. At the present time, practically all the products which are made from alcohol are imported into Canada; I have no figures at my disposal just now, as to how much is imported, but I went through this list some time ago, when the Belgo-Canadian and the Laurentide were investigating the matter, and I believe that if there is a little interest shown by the manufacturers using alcohol, the mills which are now running their waste into the river will soon consider the production of alcohol from this sulphite waste liquor. It is for the Canadian manufacturers to manufacture stuff which can be made out of alcohol. There are a good many such articles which, with a little educational work, can be made at home, and we will not have to import so much.

Mr. Stephenson: In a recent number of a British chemical periodical there was a report of a discussion there on this matter, of industrial alcohol, and its relation to two phases: one, the use of grain and the other the use of wood products. It was also stated that if one hundred million gallons of alcohol could be placed in Great Britain, and mixed with fifty million gallons of benzol, which could be recovered and easily obtained, the motor fuel problem of Great Britain would be very largely taken care of. The discussion also brought out the advisability or at least the possibility of British Dominions furnishing the alcohol from their wood waste, and waste sulphite liquor.

The Chairman: I might say that in Canada there are two or three large distilleries that make "hoonze" and industrial alcohol from grain and molasses. Some of these companies have spoken rather favorably of waste sulphite liquor as raw material for alcohol, and have said they would like to get in touch with some of the mills which were considering making sulphite alcohol: that they might be interested in the distilling end. They have the necessary equipment, which is now practically idle, and they know the fermenting and distilling business.

This sulphite alcohol industry is well established in Europe, and will be established in Canada, and I think the lesson of this paper and discussion should be that great care should be taken with the first development. Too much should not be taken for granted, and I hope we will be willing to pool our information and make the first development a success as a basis for further expansion.

Mr. Hazen: I had occasion to look into this question of industrial alcohol from sulphite liquor, and among other things, while looking into it, I had one or two conferences with the managers of one of the distilleries, and we both thought the odds in favor of alcohol from sulphite liquor were very slender. The cost of production—I am sorry I have not got the exact figures here—the cost of production was so near the ordinary cost of alcohol when the duty was removed that it became a venture of rather doubtful outlook. Now, in a new industry like this, one wants a very good chance of financial success. There is just one other suggestion that occurs to me in connection with the matter for the pulp manufacturer. I don't think that the cost of refining is so serious a one if handled along certain lines, as it might be. The wood alcohol people establish the oven plant where the wood is cheap, separate the acetic acid and concentrate the crude wood alcohol to 90% strength, in a simple and inexpensive still. This unrefined crude wood alcohol is then shipped in tank cars to a central plant, where it is refined for the market.

If this plan of operation were followed by the pulp mills it would minimize materially the expense of refining, as the distilling equipment needed at the mill would be comparatively inexpensive. The procedure suggested involves no loss of labor or of heat, and a central refinery operating for the benefit of all the mills in a given district such as for the province of Quebec would be perfectly feasible, and, in my opinion, economical, as it would require only one expensive refining outfit and eliminate the duplication of plant and of staff otherwise involved. I think such a pooling of the refining operations is a logical development that should be carefully considered.

The Chairman suggested that in planning any such co-operation, the pulp mill see to it that the refiner does not get all the profit.

Mr. Stadler: The refining installation which is required is a very small percentage of the plant cost. The main cost of the installation is in getting whatever alcohol there is in the waste liquor, and separating it. I think in a mill of a capacity of one hundred tons per day or more it would be much better to refine the alcohol, and if any of the big mills took it up, they would finish the alcohol ready for use.

Mr. Berger: There is one point that might be brought into this discussion, and which will have some bearing on the future, and that is, the pollution of the streams. I do not know how strict Canada is regarding this matter, but the United States Government is getting very strict along this line. They are getting after the mills for polluting the streams, the same as the tanneries and stock yards, or anything like that. No doubt other countries will do likewise.

Mr. Hazen stated that during the week he had seen a sample of the evaporated liquor, and found it contained 28 per cent tannin, which is being used in some cases in place of high priced tannin.

The Chairman said: It is not really tannin, but is used to fill in—as a filler in connection with tannin.

NOTE: On the charts on page 118 of this Magazine, the curves should all begin at the 5th hour instead of the 4th.

A discussion of Sulphite Waste Liquor by the T. A. P. I. is given in Paper, March 19.

PULP AND PAPER NEWS

W. C. Reynolds, who enlisted with the 6th Canadian Mounted Rifles, Hamilton, for overseas service, and was taken a prisoner at the battle of Cambrai, by the Germans and kept in confinement for three months, recently returned to Toronto. He was for several years employed on the office staff of the Provincial Paper Mills Co., and has now taken a position with the Barber mill at Georgetown, Ont.

Gunner Arthur A. Hobson, who has been overseas for several years with the 22nd Howitzer Battery, 2nd Canadian Division, has returned to Toronto. He was formerly employed for several years in the office of the Toronto Paper Mfg. Co.

Archie Reid, formerly accountant in the office of the Provincial Paper Mills Co., Toronto, who enlisted with the Cobourg Heavy Battery, and later was with the 2nd Division Heavy Trench Mortars, has returned from overseas. He has gone to Valleyfield, Que., where he has been appointed office manager of the National Paper Co.

H. C. Woods, of Vancouver, has been appointed manager of Warwick Bros. and Rutter, manufacturing stationers, Toronto, succeeding N. A. Sinclair, who occupied that position for the past fifteen years, but left recently to take a responsible position with a large New York concern. Mr. Woods has been with Warwick Bros. and Rutter for the past eighteen years, and has covered the western territory. R. S. Greenwood, formerly in the book and stationery business in St. Catharines, and latterly with the Robert Simpson Co., Toronto, has joined the staff of Warwick Bros. and Rutter, and will supervise the ground formerly looked after by Mr. Woods.

T. J. Allen, of Paper Sales, Limited, Toronto, spent the past week calling upon the trade in Ottawa and other eastern points, and reports that the prospects for spring business are good.

John B. Benson, passed away recently in Midland, Ont., at the age of eighty-four years. He was widely known as a timber and pulp wood expert.

W. D. Woodruff, President of the Lincoln Paper Mills Co., Merriton, Ont., accompanied by his wife and young son, is spending a few weeks at Jekyll Island, off the coast of Georgia.

Ald. Thomas H. Manley, of Sarnia, Ont., died recently from an attack of influenza. He was forty-four years of age, and had held a number of important positions, being prominently identified with the Knights of Pythias. Ald. Manley was widely known as a paper, stationery and book dealer, and conducted a successful business.

Travis A. Tod, formerly with the Federated Press, Montreal, and also former sales manager of the National Paper Co., is now at the head of the Montreal Herald job department. Messrs. Ronalds and Thornton, until lately identified with the latter establishment, have joined S. B. Foote & Co., Montreal, who are widely known printers in connection with the publication of Telephone Directories, etc.

W. B. Frederick, of Rochester, N.Y., representing the Diamond State Fibre Co., Bridgeport, Pa., manufacturers of fibre papers, was in Toronto last week calling upon the trade.

The remains of Lieut. Scott Waldie, late of the Canadian Forestry Corps, who died recently at a Canadian demobilization camp in Wales, from pneumonia, were brought to Toronto and taken to Burlington, Ont., last week, for interment. Lieut. Waldie was a brother of R. S. Waldie, President of the Toronto Paper Mfg. Co., and previous to joining the 122nd Muskoka Battalion for overseas service, was sales manager of the Victoria Harbor Lumber Co.

Col. F. H. Deacon, of Toronto, has purchased the property of the late John Waldie, 75 Park Road, Rosedale, Toronto, at a price that is stated to be \$110,000. The real estate covers about eight and a half acres, and was the home of Mr. Waldie, for many years identified with the Toronto Paper Mfg. Co., and the Victoria Harbor Lumber Co.

E. D. Hand, a veteran publisher, died recently in Fenelon Falls, Ont., at the advanced age of eighty-seven years. In the early days there was not a better known or more respected newspaper man in the Midland district. He established several weekly papers, including the Lindsay Advocate, which afterwards became the *Warder*, the *Bobcaygeon Independent*, and latterly the *Fenelon Falls Gazette*, which he conducted for many years until he retired. Four daughters and three sons survive Mr. Hand.

A charter has been granted the Chippewa River Timber Co., Limited, with a capital stock of \$500,000, and headquarters in Toronto, in the Manning Arcade, 24 King street west. It is understood that Canadian and Illinois capital are interested in the new organization, which is empowered to carry on a lumbering business in all its branches, as well as manufacture and deal in pulp and paper. The company have acquired extensive timber interests in Northern Ontario, which they will proceed to develop in the course of a few months, and erect a saw mill as well as take out a considerable quantity of pulp wood.

It is expected that the first annual meeting of the Canadian Paper Trade Association, of which John F. Ellis of Toronto, is President, and N. L. Martin, of Toronto, secretary, will be held in Winnipeg in June, at a date to be fixed later. John Martin of Winnipeg, is Vice-President of the Association, and E. S. Munroe, of Toronto, Treasurer.

An important convention of photo engravers, representing firms from all parts of Canada, from the Atlantic as far west as Winnipeg, was held in Toronto last week, at which a national association of the craft was completed, and officers elected. Several leading photo engravers from the United States were also in attendance to assist in the organization of the Canadian body and to advise the craftsmen of the Dominion out of the experience gained by a similar association now operating across the border.

The plant of the Toronto Paper Mfg. Co., at Cornwall, Ont., will be closed down for two weeks from March 29, while the annual repairs are being made by the Department of Railways and Canals to the Cornwall canal. During this time the paper mill equipment will be given a thorough overhauling.

United Paper Mills, Toronto, are opening a branch in Hamilton, at 64 John street North, and have taken over the flat paper section of the National Paper Goods, Limited. C. W. Paul, who has been western Ontario representative of United Paper Mills for some years, will have charge of the new Hamilton branch, and still look after his old ground. National Paper Goods will devote their attention henceforth exclusively to the manufacture of envelopes, paper-teries and fancy stationery, and will greatly increase their facilities and output at their premises, 144 Queen St. North, Hamilton.

A charter has been granted to the Jost Company, Limited, with headquarters in Montreal and a capital stock of \$50,000, to carry on the business as manufacturers of and dealers in pulpwood, pulp, paper, etc. Among those interested are P. M. Jost and A. E. Weaver, of Westmount, Que.

Howard J. Searight, private secretary of Brigadier-General J. B. White, manager of the pulpwood and lumbering department of the Riordon Pulp and Paper Co., Montreal, died recently from an attack of pneumonia. He was twenty-six years of age, and had been in the service for eight years. The remains were taken to Norwood, Ont., his former home, for interment.

The Port Arthur Pulp and Paper Co., Port Arthur, Ont., are taking on a number of returned soldiers in their woods, shipping and chemical research departments, and reports that the men are making good in their new work. A. G. Pounsford, general manager of the company, was in Toronto last week on business, and reports that the mill has an ample supply of pulpwood on hand for the coming year.

John G. Sutherland, of Dayton, Ohio, sales manager of the Spanish River Pulp and Paper Mills, Limited, was in Toronto last week calling upon his many old friends in the trade. He reports that all the plants of the company are busy and running smoothly.

The regular quarterly dividend of one and three-quarter per cent. on the preferred stock of the Abitibi Power and Paper Co., Limited, has been declared for the past quarter. The Riordon Pulp and Paper Co. have also declared their regular quarterly dividend of one and three-quarter per cent. on the preferred stock of that organization, while the Pacific-Burt Co., Toronto, manufacturers of counter check books and paper boxes, have just announced the regular dividend of one and three-quarter per cent. on the preferred shares.

The United Financial Corporation has been formed representing the union of C. Meredith & Co., Limited, Montreal, with the Guaranty Trust Co. of New York, Sir Charles Gordon, who is vice-president of the Bank of Montreal, and was president of the Meredith house, retains the presidency of the new organization. Sir Charles is a director of the Provincial Paper Mills Co., Toronto. Among the other directors of the new financial merger are George Chaboon, Jr., President of the Laurentide Co., Grand' Mere, Que., and C. R. Hosmer, who is a director of the Canada Paper Co., Limited.

Ebenezer Pieken, the veteran proprietor of the Beaver Hall Hill book shop in Montreal, passed away suddenly last week, aged seventy-eight years. His shop was the resort of many book lovers, who were in search of ancient prints, fine old engravings, and rare publications, and had been conducted by him for forty years. Mr. Pieken represented probably the last of the old school of book sellers, who knew and thoroughly loved the contents of the volumes which filled his shelves.

The Toronto News, which was recently acquired by a new company, this week appeared under a new title, and is now issued as the Toronto Times. C. W. McDiarmid continues as general manager, and F. D. L. Smith as editor-in-chief. The new daily presents an attractive typographical appearance, and has adopted the plan of arranging all the news under department heads, so that the reader knows where to look for what he wants. The experiment will be watched with interest.

Large quantities of pulp are being shipped via Halifax to France. Recently 40,000 tons were forwarded by one company in that city.

The Montreal Star has joined the ranks of two-cent papers. For some months the Saturday edition has been two cents, but the publishers held on at one cent for the other five days. They say that contracts for paper at a very favorable price are expiring, hence the increase.

Geo. H. Hadsakis, formerly Purchasing Agent of the Lake Superior Paper Co., and the Spanish River Pulp and Paper Mills of Sault Ste. Marie, Ontario, has severed his connections with the above companies to take up the duties of Sales Manager for The Lindsay Wire Weaving Co., of Cleveland, Ohio, covering Canada and all Eastern States.

NEW PAPER IN CALGARY.

Robb Sutherland announced that the Evening News Company had received a charter and would operate an evening newspaper in Calgary, starting in April. The moderation league is back of the enterprise, he said. The incorporators are Robb Sutherland, Charles J. Lang, H. J. Marshall and Sergeant-Major Bateson. Mr. Sutherland states that the organization has no connection with the Calgary Canadian.

UNCAS MILL IN CANADIAN HANDS.

The "Uncas" mill of the American Straw Board Co. at Norwich, Conn., is now the "locus operandi" of the Ironsides Board Corporation. Canadian interests have acquired the property, which contains three board machines, one 76", one 122" and one 132" five cylinder machines, with a capacity of 150 tons per day. Additional equipment is being added in the form of stone roll beaters, ball bearings on main shafts, cylinder molds, etc., and Sturtevant hot air system on the machines.

The new company proposes to manufacture high grade test and fibre boards only, for which a market has already been secured. The president is J. G. Mays, who is well known among pulp and paper men, and who for three years has been connected in an official capacity in the development of the 150-ton sulphite mill of the Mattagami Pulp and Paper Co. T. W. Fraser is engaged as Local Manager.

We wish you great success, Joe, and hope you will buy your pulp in Canada.



CANADIAN MARKETS.

Toronto, March 24.—The paper market continues spotty, and lately there have been many ups and downs. Business with some firms is decidedly brisk, and with others it is comparatively quiet. All buying is largely from hand to mouth, and there is no disposition to place large orders. There are several reasons for this, and one is the uncertainty regarding the tariff. Until the Finance Minister at Ottawa has delivered his budget speech, and it is known what changes if any are to be made in the fiscal policy of the country, there will naturally be a certain amount of hesitancy. Manufacturers and other large concerns want to know if the business war profits tax is to be continued, what will be the legislation in regard to income assessment, how it will be applied, etc., and there is also the element of labor. What will be done on May day, will there be any strikes or fresh demands? There are many features that have to be taken into consideration, and naturally firms are proceeding cautiously.

Prices are holding firm in nearly all grades. There has been a reduction of about a quarter of a cent on bristols. It was mentioned recently that there has been a decrease of about eight to ten per cent. on toilet papers. During the past week there was a drop on bleached tissues. No. 1 bleached have been selling, 20 x 30 size, per ream, at \$1.55, and the figure is now \$1.35. The quotation for 24 x 36, per ream, has been \$2.20; it is now \$1.90. Toilet and tissue plants are fairly busy, and are able to give prompt deliveries. Coated paper mills are running pretty full, and it has been rumored that there is going to be an increase of one cent in raw stock. If this comes into effect it will mean an advance in the figure for the finished product.

The market for sulphite pulp is still quiet, and production has been cut down by a number of mills. Prices are still holding at the figures quoted, and it is felt that in a short time there will be an increased demand. Sulphate pulp is now quoted at \$90 at the mill. Shipments of kraft paper and sulphate pulp to England and France are limited owing to the restrictions and absence of sufficient ocean tonnage. There are quite heavy cargoes going forward, however, to

Australia, New Zealand and South Africa, although some of the mills have large stocks on hand. Wrapping paper mills report business as fair.

There was a meeting of the wrapping paper section of the Canadian Paper Trade Association held recently in Toronto, at which several matters were taken up and better trade relations considered. A resolution was sent to the tissue and wrapping paper mills pledging the support of the Association to the Made-in-Canada movement, and expressing a willingness to join with the manufacturers generally in the proposition to encourage the use and sale of Canadian-made paper products. It is understood that the manufacturers of kraft paper have adopted a resale price on kraft in ton lots and less than ton lots in order to stabilize conditions, and in the interest of better conditions in merchandizing.

It is expected that, what will probably be the last sitting of the news print investigation will be held in Ottawa on Monday, April 9th. The auditors have been completing their supplementary reports, and the mills will submit their final argument in the case. As soon as the Peace terms are signed it is expected that the government regulation and control of news print will be called off, and the old law of supply and demand will henceforth govern. The news print mills are busy, as advertising with the most of the daily and weekly papers is good, and shows in many instances a decided increase. The result is that orders are being increased, as with the discussion on the tariff and Parliamentary proceedings, there are additions to the number of regular readers. There have been favorable conditions so far as water and mild weather are concerned for production, and the coal bill of most mills are decidedly less than a year ago owing to the exceptionally warm weather. Shipping conditions are also excellent, and no complaints are heard with respect to transportation.

There is a marked dullness in the waste paper line, and mills are not buying heavily for the most part, as paper box manufacturers are not busy, and board mills are well supplied. Some printers have a good stock of low grade bonds and machine finish paper on hand, as well as white wove writing paper. With the book mills generally business is good, and the out-

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of Canadian

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At Top Prices.
Write us and be
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look is considered favorable. Attention is being directed more and more to export business. Prices are rigid, and it is pleasing to record there has been a considerable picking up of conditions in these lines across the border. That the future of the paper industry is viewed with assurance is indicated in the way that the listed stocks keep up in value and the trading brisk. There is a feeling that earnings this year will be better than ever, and with conditions stabilized and no unforeseen barrier in the way, the volume of trade during 1919 should be satisfactory.

Each week sees a number of new incorporations in the pulp and paper arena. Companies are getting ready to make extensions when the proper time comes, and with the recent reductions in the price of steel it is believed there will be a fall in the cost of pulp and paper mill equipment to something like those which prevailed before the war, although installations, owing to labor and other conditions, will never be as low as in 1913.

The price at which tag manilla is now being sold by the jobbers to the consuming trade is 8 cents in car load lots, 8½ cents on one half ton, and up to ton lots, and 9 cents in ream lots up to one ton.

The price of board will be the same for the next three months or up to the end of June, as it has been for the previous three months, straw board being \$75 per ton, chip board, \$75, vat lined chip board \$80, filled wood board \$83, news lining 80 cents per 100 sheets of 1,200 square inches.

Much interest is being taken by Canadian artists and designers in the competition inaugurated by the Canadian Pulp and Paper Association in the prize of one hundred dollars offered for the best trade-mark design or insignia suitable as a label to be attached to the various products of the members, the contest closing on April 15. As is explained in the official announcement the purpose of the trade-mark is to increase the use of Canadian made paper by enabling purchasers readily to identify such paper as distinct from that produced in countries other than Canada, and the competition is open to any one not directly connected with the Canadian Pulp and Paper Association.

Paper.

•News (rolls) at mill, in earload lots	\$3.45
•News (rolls) in less than earload lots	\$3.52½
•News (sheet) at mill, in earload lots	\$3.80
•News (sheets) in less than earload lots	\$3.92½
xBook papers (earload), No. 1	\$9.75
xBook papers (ton lots), No. 1	\$10.00
xBook papers (earload), No. 2	\$9.50
xBook papers (ton lots), No. 2	\$9.75
xBook papers (earload), No. 3	\$8.25
xBook papers (ton lots), No. 3	\$8.75
Ledgers	18c up
Sulphite bonds	13½c
Light tinted bonds	14½c
Dark tinted bonds	16c
White Wrapping	\$5.25
Writings No. 2 (M.F.)	12½ up
Coated book and litho, No. 1	\$12.25
Coated book and litho, No. 2	\$11.25
Coated book and litho, No. 3	\$10.50
Coated book and litho, colored	\$12.50 to \$14.00
Grey Browns	\$5.25
Writing No. 1 (S. C.)	13c up
Fibre	\$7.35
Manila, No. 1	\$7.35

Manila B.	\$5.60
Tag Manila	\$6.50
Unglazed kraft	\$9.00
Glazed kraft	\$9.00
Tissues, bleached	\$1.35 to \$1.90
Tissue, (unbleached sulphite)	\$1.35 to \$1.75
Tissues, eap	\$1.00 to \$1.40
Tissues, manila	90c. to \$1.20
Natural greaseproof	15c.
Bleached grease proof	19c.
Genuine vegetable parchment	27c.
Bleached white glassine	22c
Drug papers, whites and tints	9c. to 10c.
Paper bags, manila (discount)	35 per cent.
Paper bags, kraft	27½ and 10 per cent.
Confectionery bags	34 per cent.
Gusset bags (manila)	35 and 15 per cent.
Straw board	\$75.00
Chip board	\$75.00
Vat lined chip board	\$80.00
Filled wood board	\$83.00
News board	\$80.00
Double manila lined board	\$90.00
Manila lined folding board, chip back	\$87.50
Pulp folding board	\$95.00
Jute board, No. 3	\$75.00
Tag board	\$155.00
White patent coated board	\$115.00 to \$130.00
Grey folding board	\$115.00
Pasted board	\$95.00

*For Canada only.

x—These prices are for machine finish, super-calender one-half cent higher.

Pulp.

F.O.B. Mill.

Groundwood pulp	\$27.00 to \$29.00
Sulphite, news grade	\$70.00 to \$75.00
Sulphite, easy bleaching	\$90.00 to \$95.00
Sulphite, bleached	\$120.00 to \$125.00
Sulphate	\$90.00

NEW YORK MARKETS.

New York, March 22.—There has been very little change of an important character in the paper market this week. Demand for at least some kinds of paper has expanded, but aggregate business continues to involve limited quantities of merchandise, with buyers still pursuing the same conservative policy that they have followed for some time. Export business has increased to an extent. South American buyers appear to be gradually acquiring confidence in the market, and the maintenance of prices, and are placing orders with less hesitancy than has characterized their actions during recent months. Domestic consumers, however, are confining their purchases mainly to supplies directly needed, though the gradual increase in consumption is creative of a somewhat better demand.

Prices on the whole are close to levels previously reported. Certain grades of paper, notably coarse papers and the cheaper qualities of writing, bond and ledger, have sagged slightly, but there has been no great amount of selling pressure exerted on buyers, and the fluctuation in prices has been within comparatively negligible limits.

Newsprint is one of the firm items in the trade at present. Publishers are absorbing supplies in a con-

WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

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Cor. of 42nd Street
NEW YORK CITY

sistent way, and are frequently coming into the market for additional lots to augment their contract shipments, with the result that a fairly large transient business is passing. Between 3.75 and 4.00 cents per pound is the range of prices quoted to transient purchasers on roll newsprint, while side runs are selling at 3.50 to 3.75 cents.

Book papers are in steady call and demand appears to be on the increase. Prices are firm and mills are displaying a more independent attitude than for some time. Wrapping papers are in light demand, and prices are easy. No. 1 kraft is quoted at around 8.00 cents a pound, and No. 2 at 7.00 cents. Fine papers are sought only in restricted volume, yet quotations are maintained. Most mills have comparatively large stocks of high grade writings on hand and, because of the fact that the bulk of their holdings has been produced at high costs, are little disposed to cut prices simply as an inducement to buyers.

Boards have firmed in price. Manufacturers are now quoting at a basis of about \$37 to \$38 per ton for chip, and seem determined to maintain prices notwithstanding the rather slow demand from consuming sources.

GROUNDWOOD.—Inactivity reigns in the market for groundwood pulp, and few transactions involving important tonnages of pulp are going through at present. Consumers apparently have their current requirements covered by contract supplies, and are unwilling to accept offerings of spot pulp unless being in actual need of additional amounts. Between \$26 and \$27 a ton at the grinding plant is the range of prices in the East, with some sales reported at concessions.

CHEMICAL PULP.—Demand for chemical pulp continues dull. Such sales as are being accomplished by manufacturers seldom involve other than negligible tonnages, and there is a distinctly easy tone to prices on domestic grades. The truth of the matter seems to be that producers have stocks on hand which they are anxious to move, and which they are unable to find an outlet for, so that they are offering to shade prices in an apparent effort to attract buyers. Foreign pulp is held with comparative firmness, though offerings appear on the increase. Nevertheless, available supplies of imported pulp are decidedly meagre, and owners seem to be well able to hold for the prices wanted. Domestic bleached sulphite is quotable at a range of 5.25 to 6.00 cents a pound. One of the largest producers is still quoting the latter figure, though sales in other quarters at 5.75 cents, and even down to 5.25 cents, have been recorded. Domestic unbleached sulphite of news-

print quality is held at around \$70 per ton, while easy bleach is quoted at \$85 to \$90. Kraft is weak and available in larger quantities than for some time at \$85 to \$90 a ton f.o.b. pulp mill.

RAGS.—The market for rags is quiet, and few transactions of an important character have been consummated this week. Mills are coming into the market at intervals to purchase odd parcels of stock found available at attractive prices, or else needed to fill out supplies on hand on some run of paper, but the aggressive movement of supplies into consuming channels is at best light and of insufficient volume to have influence on values. No. 1 repacked old white rags are selling at around 5.50 cents a pound, while repacked thirds and blues are freely available at 3.25 and street soiled whites at 3.00 cents. New cuttings are in restricted call, though in the long run there is a relatively better demand for them than for old stock.

PAPER STOCK.—Low grades of old paper are sought in fairly large volume, and prices in one or two instances have risen just a shade this week. No. 1 mixed paper has featured the demand, and has sold in larger quantity than for some time, with mills paying in the neighborhood of 40 cents per hundred pounds f.o.b. New York. Flat stock also has been sought in a consistent way at a price basis of around 1.25 cents for heavy books and magazines. High grade paper stock is noticeably neglected by manufacturers. Shavings are moving merely in lots of a carload or two at a time, and in scattered directions. Dealers explain the poor demand for shavings to the easier position of wood pulp, and the resultant larger use of the primary material by mills. No. 1 hard white shavings are offered at about 5.00 cents a pound New York, while No. 1 soft whites are available in good-sized tonnage at 4.00 cents and less.

BAGGING AND ROPE.—The situation in old bagging is characterized by dullness and easiness. Consumers are confining their current purchasing to an occasional car or two found available at low prices, and it is problematical just what definite market values are. No. 1 scrap bagging is offered at 2.40 to 2.50 cents a pound f.o.b. New York, and the probabilities are supplies can be secured at cheaper figures. Old Manila rope is moving in a fairly consistent manner, though in limited volume. Arrivals from abroad are increasing, and this of course prompts consumers to keep out of the domestic market unless in immediate need of fresh supplies. Between 4.75 and 5.00 cents a pound at the point of shipment is the range of quotations on No. 1 domestic rope.

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EDITORIAL

IMPROVING FOREST SERVICE.

A proposal has been made in Ontario for converting the forestry service into a permanent perennial organization. It is felt by many that more stable conditions can be obtained and greater efficiency by enlarging the scope of the present organization, and changing it so as to give the members of the force greater authority.

Major A. R. Lawrence, who has lived for some years in the north country, and has had a good opportunity to study forestry and forest ranging conditions at first hand, has conceived a plan whereby the operation of forest protective measures can be made more effective. A careful estimate indicates the possibility of covering the ground at a less expense than is now carried by the province for maintaining the present fire ranging force, and other activities that might be undertaken by such a force and connected with their regular duties. It would be possible by thus combining the duties of fire ranging, timber estimating, log scaling, protection of game, inspection of homestead sites, etc., to provide work for a permanent force throughout the year. And to these duties could be added the policing of the forest covered areas and the operation of nurseries and reforestation of burnt over and other waste lands not suited to agriculture. Including police duties with those of the fire ranger and game warden is a very easy and natural step, and if we add to this a regular uniform for these officers we immediately stabilize the force and give the individuals a respect-demanding position in the community which cannot be expected of a civilian. The wearing of a uniform and a membership in a permanent and respected organization which is rendering an important service to the community will have a very inspiring effect on the members of the force, and will tend to maintain discipline and foster an esprit de corps which is an exceedingly important factor in a body of men who are given the degree of authority that should be exercised by a force of this kind in the community they will serve.

The present service has done good work under a very considerable handicap, both as regards funds and men available as forest rangers. The time of the head of this service is so greatly taken up with petty administrative duties that it is practically impossible to give the degree of attention to real forestry problems that the situation deserves. The new

plan would make it more attractive for a man who loves the woods to find satisfactory employment the year round, and it would be a simple, as well as a sensible matter to allow a part of the force, or perhaps even to require them, to take up the intensive study in the winter time of some special features of fire protection, reforestation, or other subjects connected with their work. The Ontario service is already employing a number of returned soldiers, and it is likely that a majority of the force can be recruited from these men who have served on the other side, and have learned to respect and honor a uniform, to appreciate discipline and who, if they have been in the forestry service, will have seen the advantage of maintaining forests in a state of maximum efficiency.

The Royal North-West Mounted Police are known the world over for the wonderful service that they have rendered, not only in maintaining order, but in assisting in many ways in the settlement and development of new stretches of country. It is not too much to expect that similar service can be rendered by a well disciplined, conscientious organization in the north country, especially as a large number of the new settlers are likely to be soldiers who appreciate discipline, but would quite likely resent being dictated to by an ordinary civilian. An outline of the plan as conceived by Mayor Lawrence, and approved by a number of permanent Ontario citizens, who are deeply interested in the future of the forest, is as follows:

"An organization such as the proposed Ontario Forestry Service could consist of headquarters operating with a forestry board, who could conjointly arrange the policy of all forestry matters and employ the personnel of the service, taking into consideration medical fitness and competency.

"The area to be safeguarded would be divided into four districts, with a district commander in charge. The district commander could be in charge of 100 to 125 permanent men, and his authority could be limited to such extent as settled by the forestry board. Each district could be divided into four posts, with a post-commander or supervisor over one-quarter of the permanent force of the district.

"With four district headquarters and sixteen posts the country would have twenty permanent points where they could obtain assistance and where they could have their business settled quickly. From the sixteen posts the men of the Forestry Service branch off to do the actual patrol work and other duties

"The headquarters of the Ontario Forestry Ser-

vice, the four district headquarters and the sixteen posts could be linked together by wireless, and attached to the four district headquarters a limited number of airplanes, fitted with wireless, used for the same purpose as in the army, namely, for observations and getting in touch with the ground or fire-fighting force when a fire is located.

"Our first duty is prevention—prevention of fires being started. This can only be done on the ground by an efficient force seeing that fire hazards are removed outside the danger season, and that fires are not allowed to run rampant in that season.

"Airplanes or hydroplanes have their use, and should be used in reasonable numbers for the only purpose for which they are designed, that is, for observation, and equipped with wireless and the maps of the country squared on the French system. They would be of great value in notifying the posts when a fire is located, but the root of the whole situation lies in proper prevention, and this view must not be lost in any plan that is being considered."

THE WHITLEY SCHEME IN CANADA.

A recent despatch from Toronto states that the Whitley scheme is to be made use of in Ontario. For those who have not followed the developments of British industry we may briefly state that a commission appointed to investigate the causes of industrial unrest in England and to suggest possible remedies has made recommendations which are already being put in force on the other side. An excellent account of the progress that has been made in this regard will be found in the Saturday Evening Post for March 15th. The idea is simply to bring qualified representatives of workmen and employers together on a friendly footing to discuss matters of importance to both and by improving conditions and maintaining friendly relations so as, by conference and co-operation, to avoid misunderstandings and trouble. The working of the plan involves the organization of the employers of the important industries in a district as well as the organization of the workmen. The plan as far as it has been tried out in England gives such good promise of satisfactory results that it is very gratifying to note a similar movement in Ontario. This will be watched with interest, and we trust that it will demonstrate the practicability of the plan in such a way as to encourage its adoption throughout the Dominion. Our industries are not so thoroughly unionized as many of those in England, but the value of such organizations cannot be questioned when they are conducted on sane principles, and not manipulated purely for selfish interests. Similar organizations of employers would do away with the unfair methods which some concerns occasionally practice for their selfish interest, and which are usually dependent for their gain on the exploiting in some manner of the laboring man.

There is certainly a new era dawning in industrial relationships, and if Canadian employers and workmen will only keep together and co-operate in such

matters as are of mutual interest we shall experience a period, not only of great prosperity, but of unbroken happiness and peaceful relationships that will be the best result that we could hope to receive from the strenuous years of the Great War.

Kraft mills seem to be a bit under the weather, or is it a touch of "spring fever?" Cheer up, there are signs of a general revival of business confidence and activity, and this should considerably increase demand for wrappings and shipping containers. The fibre box has come to stay, although it seems to be more or less in hiding just now. In considering the kraft market we must remember that, in proportion to the amount used, there has been a greater increase in production of this line than of almost any other.

It seems strange that with building operations already one-fourth larger than last year, the demand for boards and building papers is not greater. The call will come, then watch the groundwood and other pulp.

A well-known groundwood pulp producer says Canada should have no difficulty in competing on price of mechanical pulp with Swedish manufacturers in the English market. His mill is on tide-water, which may make a considerable difference, but there are encouraging amounts of groundwood leaving Halifax. Certain Nova Scotia mills should take on a new lease of life. Let us hope the provincial government will protect the future of these mills by establishing immediately a progressive and comprehensive forest policy. It will pay.

We met His Honor, the Mayor of Iroquois Falls, in Toronto recently. He was after some of that government money to build houses for the Abitibi workmen. Perhaps when the government is directly interested financially in houses in regions subject to destruction by forest fires, there will be more interest in the matter taken by the Legislature.

TECHNICAL EDUCATION.

A council for the direction of technical studies has been formed by the teachers of the Montreal Technical School, under the patronage of Mr. Gaspard DeSerres, president of the corporation of the school, with the following objects:

To study the conditions and needs with regard to the industries and the workmen;

To render the programme of technical education made adequate and satisfactory to the needs of the country;

To plan a programme of propaganda by which the members of the council, in their respective specialties, will bring before the public the advantages of technical education and training;

To generally develop technical studies and their application, and to place before the board of directors of the school suggestions and plans for consideration and action.

Inspecting Human Machinery

By DR. FISKE, of the Life Extension Institute, New York City.

Introducing Dr. Fiske to the Technical Section of the Canadian Pulp & Paper Association at the annual meeting, Jan. 30, 1919, Vice-Chairman F. A. Sabbatton, said: This life extension work is of really vital importance. The men who work for us in our mills, unless they are healthy and well-kept, are never efficient. We have begun to appreciate that a great deal more since the epidemic was in our midst, than we ever did before. We have taken some very short steps in this direction in Grand Mere, and we hope to take some longer steps in the future, and I think that what Doctor Fiske has to say will be of interest to you all.

Doctor Fiske began his address: I deem it a great privilege to be allowed to appear upon your program this afternoon—rather unexpectedly to me—and at first thought it might seem that my topic is rather far-removed from your interests, but this morning I listened to many interesting papers on the subjects of forest conservation, and the subject of forestry culture, and this afternoon I have listened to your papers here on the subject of the care of the machinery, and the proper type of machinery and the conservation of machinery, how it increases its efficiency, etc., and it seems to me that the care of your forests and your machinery has no more significance than the efficiency of the human body.

The war has, I think, brought this subject up to the surface in a way that nothing else could have done. We have been accustomed to move along; we have noticed men at their work, and assumed that they were all healthy, and that the average man needed no attention at all, until something happened; until they broke down. That has also been the attitude of medicine. Medicine has, for decades and centuries, missed its opportunities in prevention; it has applied itself largely to emergency methods; the medical profession is greatly attached to the emergency methods, and emergency treatment—to cure rather than to prevent.

In community hygiene we have accomplished much, but we received a severe shock in this epidemic of influenza, which showed the limitations of preventative methods. The influenza, while it is claimed, took the robust and healthy, as well as the under-nourished, still I think you will find there was lack of resistance in the human body wherever the attack proved fatal.

The war made a call on men at the most vigorous age of their lives, and the results were shocking to many of us. Not so to myself and my associates, who had been making these examinations of a large group of average men, and who could predict in advance about what actually occurred in the draft. The rejections of men between the ages of twenty-one and thirty-one were thirty-eight per cent of the men in the United States; in the second draft, it ran about the same, and in the last draft, where they raised the age limit to thirty-five, the rejection rate also increased to about forty to fifty per cent. No accurate figures have been obtainable as yet, but I understand the rejection rate at the camps was about that figure, due to the increased efficiency of the examina-

tion, and through the fact that we had gone into a higher age limit.

I showed a chart this morning demonstrating the death rate from the age of twelve upwards, and the death rate at forty is about three times the death rate at the age of twenty, which shows us how foolish our attitude is toward men in early maturity and later maturity.

We see men at work and we believe they are active and efficient, and they themselves have considerable confidence in their vitality until some acid test is applied, such as the draft, and it is then that the men of the middle age realize where they are, and realize that there is some underlying weakness that disqualifies him from being a good soldier. That is, the average man at that age.

That is a condition we should not look upon with gloom, but with hope, because, knowing that many of these conditions that disqualified men for the draft are caused by wrong living habits and by neglect of the human body, and knowing the ordinary so-called "aging processes" are due to causes, many of them preventable, and controllable—I say, when we know that, we can very clearly see that we age too fast; too much chronic disease; that we work below par—most of us—because of neglect.

There is an immense amount to learn. Nobody in this line of work claims to know everything about how to live. We know a great deal about it; we know a great deal about the causation of diseases which we did not know five or ten years ago. That knowledge should be put to the best possible use. I know of a Bank in New York City where three of the most important men had to be absent for a year; apparently a foolish proposition that men with the intellect and requirements big enough to allow their handling a business of the magnitude of this one, to allow their bodies to get in such shape. All of this can be prevented by common sense overhauling of the human body, just as you inspect your machinery to find out the early signs of trouble and enable you to check that trouble in its inception.

Of course, men must grow old and men must die, but that does not mean that we should consent to grow old before our time, or consent to a sure progress of attack in the young people as a necessary thing. I can name a number of definite causes which are responsible for old age, and for a great deal of depression in the human body, and I would be very glad if anybody could tell me if they know of any other causes. Some that I know of are infection, poison, mental apathy, mental drain, physical apathy, physical drain, food deficiency and food excesses. Apart from these things—and heredity (which is the partial cause), I know of no causes for old age and death. Many of these things we cannot absolutely prevent. As one of our great surgeons, Doctor Mayo, has said, "Life is a continual struggle with micro-organisms," and that is true, and in the long run we are beaten, but we can carry that fight on in a much higher plane. While we cannot extend human life very much, we can broaden it, and make it a better life, and I think there are very few people who, with a careful overhauling of the human body, to find

out their individual needs, and the application of the rules of life as we know them now, but would have their life broadened, their capacity for the enjoyment of living improved, and their capacity for improvement enlarged. In what peculiar way can that be done?

Our Life Extension Institute has approached the problem in this way. Curiously enough it was a business man who first saw this thing clearly. He was a man who carried a large life insurance policy, and he conceived the idea that his insurance company could well afford to examine him every year to find out his condition and keep him alive. There was money in it, for the insurance company, as he was carrying several hundred thousand dollars' worth of insurance. He carried that thought to a number of life insurance men and scientific men, and he was looked upon more or less as a crank, but he finally persuaded enough men to join with him, and started the Life Extension Institute. I had been doing work of this description in the life insurance companies, examining men year after year in a certain group, and had shown that the death rate in that group was only about half of the actuarial expectations.

This work has been carried on until it now extends to above six hundred thousand life insurance policy holders. Employers of labor have also extended a similar privilege to their employees in connection with their welfare work, and numbers of individuals have joined our Institute to secure the periodical examination of the human body, ascertain the needs, advise us of the activities of life, the family history and early history of the life, and everything relating to it, and we are trying to give the individual the advantage of what science knows now as to how we should live. More than one hundred thousand people under that system have been examined, and of course there has accumulated an immense amount of material which we are studying, and which we hope to use, as well as many instruments which we use in carrying out our work.

As I say, there were many men, factory hands to bank managers, who were rejected in the draft, and I should say that sixty per cent. of the troubles found in the draft would have been prevented by proper hygiene and proper inspection of the human body from year to year, and by the application of the very simple principles of hygiene.

I hope this subject will interest many of you, and I want to say that everything we have in the Life Extension Institute in the way of statistics or information on this subject, you are welcome to, and it will be a great privilege for me to answer any inquiries which you may send to our office in New York, and if you come to New York, we will welcome you in the Institute, and if you become interested in what we are doing, if we can assist any of you in starting anything like this in your country, we will be very glad to do it.

Our work extends throughout the country and to some extent in Canada. We have five thousand physicians throughout the country, who are doing our local work, and anything attaching to this problem of the human welfare can be found in our office.

Wasn't that a grand April Fool trick the Weather Man played on us, Tuesday!

HEAVY LOADING OF PAPER DESIRABLE.

A letter to the News Print Service Bureau from C. B. Phillips of the car service section of the United States Railroad Administration contains a report showing the loading of various paper mills in New England and New York districts for the month of January, 1919.

The report indicates what shippers are doing towards car conservation, which is considered just as important now as it ever was, in order that the railroads may be in position to meet demands for equipment at all times.

The administration is urging consignees to place their orders for maximum car loads when possible, and if that is not feasible that they club in with other consignees in their section in order to buy full car loads.

The average car loadings in the New England district for the past four months are reported as follows:

Month	Paper	Pulp
October	54,435	68,014
November	56,153	69,034
December	57,246	67,975
January	55,927	75,301

The average capacity of the cars supplied for paper in New England in January was 80,000 pounds, and the average loading of paper at 77 points in round numbers was 56,000 pounds, or 70 per cent. of capacity.

In the New York district, during January, the average capacity of the cars supplied for paper at 39 points was 81,750 pounds, and the average loading of paper 53,600 pounds, or 66 per cent. of capacity.

To this Mr. Phillips added:

"We have had two or three cases brought to our attention where it was claimed heavy loading of large newsprint rolls caused them to be damaged. In each case that we have investigated we have found the damage was not the result of heavy loading but the results of letting the rolls fall from the top of the cars to the floor or from the cars to drays.

"In such cases we have suggested that machinery such as a revolvator be used in unloading cars the same as in loading them.

"It has not been necessary to discontinue the heavier loading of paper on this account, as after the investigations were completed, consignees were shown that it was in unloading that the paper was being damaged and not because equipment was heavily loaded."

FIVE FEET OF SNOW IN GASPE.

Messrs. James A. Connors, J. D. Latno, L. T. Calhoun, and Byron T. Bartlett, of the Sewall office, timber cruisers, Old Town, Me., have gone on an extensive pulpwood cruising job in the Gaspé Peninsula, P.Q. They expect to get labor there to help them and to finish the careful mapping and estimating of some 40,000 acres of land before the spring breakup. They report to the Old Town office that the weather in that country is not unduly cold, but that there is 5 feet of snow at present.

Sergt. Byron T. Bartlett, who has served in one of the Gas and Flame Regiments in France, and seen action since the first part of July, has taken up his old work of timber cruising for the James W. Sewall office at Old Town. Sergt. Bartlett was given the Croix de Guerre for bravery in action while in France.

Soda Pulp Manufacture

By E. SUTERMEISTER,
S. D. Warren Co., Westbrook, Me.

(Continued from Page 314.)

PART VI.

In Part I, Mr. Sutermeister discussed the preparation and composition of cooking liquor and the apparatus and materials employed, with illustrations; in Part II, the recovery of lime, with analyses; in Part III, the principles and practices of cooking operations with curves; in Part III, mill practices with data relating to woods employed; modified processes, and by-products of cooking; in Part IV, digesters, with diagrams; circulation and steam consumption; comparison of rotary and stationary digesters; in Part V, discharging or blowing digesters; washing the pulp, with analyses of black liquor and illustrations of apparatus.

Recovery of Soda.

During the early days of the process the recovery of the alkali from the black liquor was not attempted, but it was very soon rendered necessary by the difficulty of disposing of such large volumes of waste liquor without causing a nuisance as well as by the expense of continually replacing the entire amount of alkali used in cooking. The recovery of the alkali is especially easy from a chemical standpoint since the material dissolved from the wood is present in such combinations that on burning it leaves the alkali behind as carbonate in the black ash. Moreover, the fuel value of the dissolved woody matter is so great that its combustion furnishes a supply of heat, which, if utilized in efficient equipment, will be nearly sufficient to evaporate the weak liquors to such a point that they will support their own combustion. While the recovery process is comparatively simple chemically, the equipment required is one of the most expensive parts of a soda mill and the efficiency of its operation has a very important bearing on the cost of production.

According to Griffin and Little¹⁴ the strength of black liquors going to the evaporators is from 6° to 9° Be at 160° F, the higher gravity being reached only very rarely, while in some mills it is customary to run them at 3° to 4° Be. This latter figure is entirely too low for economical operation and would appear to indicate careless work or inadequate equipment. When cooking with liquor containing 90-95 grams per litre of caustic soda with a causticity of about 90% the black liquor first draining away tests on an average 13-14° Be. at room temperature which would be equivalent to 11.5° Be. at 160° F. Under these conditions there should be no difficulty in preparing for the evaporators a liquor which will test 7.5-8° Be. at 160° F.¹⁵

The following analysis of an average sample of the black liquor first draining away from the stock in the wash-pits indicates in a general way the proportions

between the inorganic and organic constituents in such liquors:

Black liquor testing 12¾ Be at 70° F.

	Grams per litre	Per cent. by weight	Per cent. on total solids
Total solids	180.2	16.42	....
Water	917.3	83.58	....
Caustic soda	19.5	1.78	10.8
Total alkali as Na ₂ O	49.9	4.54	27.7
Organic matter precipitated by H ₂ SO ₄	27.3	2.49	15.2

In order to burn the black liquor continuously it is necessary to concentrate it to at least 30° Be. at 130° F. and it is desirable to bring it up as high as 40° or more. In practice this concentration is performed in two quite distinct types of apparatus, one of which involves essentially open pan evaporation while the other consists of multiple-effect evaporation under reduced pressure.

Evaporating Systems.

Open pan evaporation was used in the earliest systems, the pans frequently being arranged one above the other in order to obtain better utilization of the heat, but the volume of liquor to be handled proved too great for such equipment. An improvement over this apparatus is the Porion evaporator which, according to Griffin & Little¹⁶ was formerly much used in England and in Europe. This consists of a brick chamber, the lower part of which forms a shallow reservoir, and through which pass two cross shafts which are driven from outside. On these two shafts are fixed paddles which, on revolving at high speed, throw the black liquor into the upper part of the chamber in the form of a fine spray. At one end of this chamber is the calcining furnace in which the concentration and incineration are completed. A coal fire at one end of this furnace assists the operation and all the products of combustion pass through the evaporating chamber on their way to the stack, thus heating and evaporating the liquor while themselves being cooled down to approximately 85° C. When the liquor in the reservoir reaches a density of about 29° Be. it is removed to a tank over the calciner into which it is gradually fed. This evaporator is comparatively cheap, both in first cost and up-keep, and is claimed to yield three-quarters of a ton of ash per ton of coal burned.

Somewhat similar in principle is Enderlein's evaporator in which the spray-producing paddles are replaced by wrought iron discs about six inches apart. These discs, revolving partly in the liquid, carry a thin film of the latter into the hot gases which are forced to pass between the discs in order to reach the chimney. According to Beveridge¹⁷ this apparatus shows very

¹⁴ Chemistry of Paper Making, p. 164.

¹⁵ Between 75° and 180° F. the gravity of black liquor has been found to decrease 1 degree Be. for each 34° rise in temperature.

¹⁶ Chemistry of Paper Making p. 172.

¹⁷ Beveridge—Papermakers' Pocket Book, p. 106.

clearly as good fuel economy as the multiple effect evaporators.

This second class of evaporators, known as multiple effect evaporators, makes use of the fact that the boiling point of water, or other liquid, is lowered by reducing the pressure under which evaporation takes place. The effect of pressure upon the boiling temperature of black liquor of different strengths is given in the following table, records of pressure and vacuum being in inches of mercury.

Per cent.		Boiling Points in Degrees C. at				
Deg. dry mat.	Be. at ter by	41"	20"	0"	10"	25"
24 C. weight.	pres.	pres.	pres.	vac.	vac.	
7	7.8	124.5	114.3	101.0	90.5	58.5
16	18.5	125.5	115.6	102.4	91.2	60.5
22	27.1	128.0	117.5	104.0	93.0	62.0
27	36.6	129.9	119.6	107.1	95.3	63.8
32	46.8	131.8	121.6	109.8	97.5	65.6
37	57.6	135.5	124.7	112.0	100.9	69.0

The apparatus for multiple effect evaporation usually consists of a number of vacuum pans, or "effects," so joined together that the steam from the liquor boiling in the first effect is passed into the heating space of the second effect, the steam from the second effect is used to boil the liquid in the third and so on through the system. This is rendered possible by maintaining in each effect a lower pressure than in the preceding one so that in spite of the increased concentration of the liquid the steam from the preceding effect is sufficiently hot to cause it to boil. The vacuum in the final effect is maintained by means of a condenser and pump. The number of effects which can be used successfully depends upon the rate at which the heat supplied by the steam in the first effect is dissipated by radiation and conduction. As many as six effects are used in some cases, though four are much more frequently used for black liquor.

Evaporators may be divided roughly into two classes, those in which the liquor to be evaporated passes through tubes which are surrounded by steam and those in which the steam is in the tubes while the liquor surrounds or trickles over them. Both types are used in soda mill work and both are capable of giving good

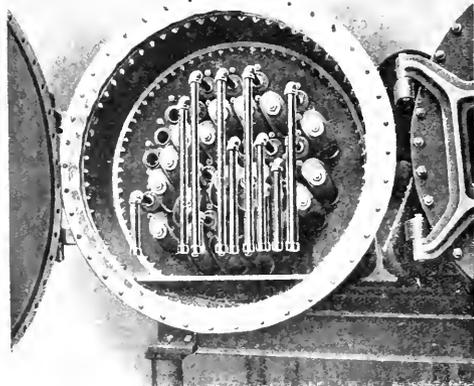


Fig. 20.—Yaryan Evaporator—Ordway-Yaryan Return Bend Arrangement.

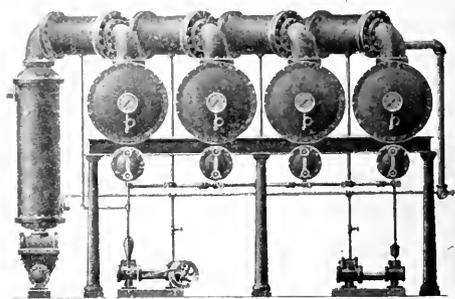
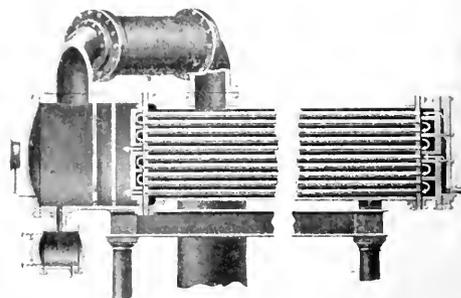


Fig. 21.—Yaryan Horizontal Type Evaporator. (Courtesy of Chas. Ordway.)

service if they are properly designed and efficiently handled.

The Yaryan evaporator, belonging to the first class, is one which is very extensively used in handling black liquor. Each effect consists of a riveted shell with tube sheets bolted and packed to cast iron rings which are riveted to the ends of the shell. Tubes are expanded into the tube sheets and are arranged in series the heads being pocketed in such a way as to form return bends for the coils. These tubes are 3 inches in diameter and 12 ft. long and as five tubes form a single unit the liquor has to travel 60 ft. before it is discharged. The liquor enters the back end of each effect and is distributed to each coil by running an open-ended pipe from its feed gland down to a common level in the feed chamber, thus insuring equal feed to all the coils. This arrangement is shown in Fig. 20. After passing through the tubes the liquor is discharged into a separating chamber containing baffle plates on the front end where the vapor and liquor separate, the vapor passing through a catch-all to prevent entrainment and thence into the heating space of the second effect, while the liquor collects in a small drum just below the separating chamber and from there goes to the tubes of the next effect.

The distinguishing feature of the Yaryan is claimed to be film evaporation which is accomplished by forcing a very small stream of liquid into a comparatively large tube. The liquor immediately boils, fill-

ing the tube with foam and steam, and forcing the entire contents very rapidly towards the discharge end. This results in rapid absorption of heat due to the fact that new liquor is constantly being brought into contact with the heated tube. The time required for liquor to pass through all the effects of an evaporator is only a few minutes, and as only a small amount of liquor is present at any one time the evaporator can be started and stopped very quickly.

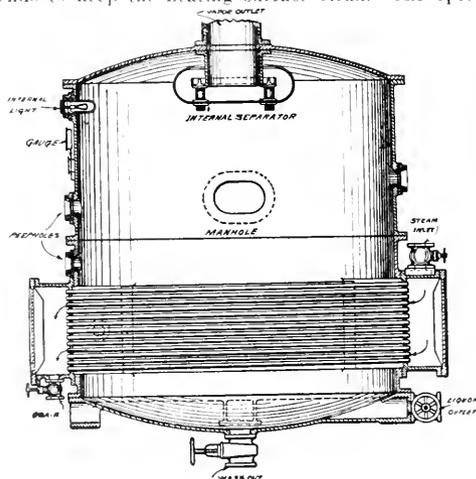
Several types of Yaryan evaporators are on the market, the horizontal type being shown in general view and a section of one effect in Fig. 21. This type requires that sufficient steam pressure be carried to produce circulation between the effects. In the vertical type the effects are arranged one above the other, which is suitable for low steam pressure as the circulation is aided by gravity. A third type, known as the Ordway-Yaryan box type, is constructed with all the effects in one shell thus reducing radiating surface and saving space.

In operating the Yaryan the density of the discharge can be increased or decreased either by increasing or decreasing the steam pressure or the feed. To increase the capacity it is necessary to increase the steam pressure. As the liquor contains impurities which gradually form scale on the tubes it is necessary to wash the evaporator occasionally; this can be done by shutting off the liquor and turning on an increased feed of hot water for about half an hour. It is also a good plan to leave the evaporator full of hot water over the week-end shut down.

The Yaryan is very economical of fuel, it being claimed by the patentees that a double effect will evaporate 16 lbs. of water per pound of coal burned under the boiler, assuming a boiler efficiency of 81½ lbs. of water per pound of coal. The triple effect is claimed to evaporate 23½ lbs., and the quadruple effect 30½ lbs. of water per pound of coal. Actual tests on a triple effect Yaryan running black liquor showed an evaporation of 18-20 lbs. of water per pound of coal according to the above assumptions.

Another make of evaporator in which the liquor is

in the tubes and the steam around them is shown in Fig. 22. This evaporator was developed from the standard return tubular boiler for the special purpose of handling foamy and delicate liquors. In this evaporator the amount of liquor in circulation is very small and as the liquor level is kept low the foam is broken up in the upper part of the tubes where film evaporation takes place. The liquor in the tubes is said to attain a speed of 100 ft. per second which tends to keep the heating surface clean. The opera-



Vertical Cross Section.

Fig. 23.—Zarembo Evaporator.

tion of this evaporator is sufficiently indicated in the sectional elevation.

The other type of evaporator in which the steam is in the tubes while the liquor is around them, is illustrated in Fig. 23, which shows a section through one effect of a Zarembo evaporator. Figure 24 shows a triple effect layout such as is used in handling black liquor except that the height of the bodies must be made greater than indicated in order to prevent loss by foaming.

The shell of the evaporator is cylindrical and usually made of cast iron; the heating surface consists of a bank of tubes through which steam passes and which are given a sufficient pitch toward the discharge end so that condensation is rapidly drained off. The liquor circulates up past the tubes and downward through segment-shaped openings between the tubes and the sides of the evaporator. The vapor space above the tubes is so arranged that its entire volume is operative in preventing loss by entrainment and as an additional precaution there is provided an internal separator which returns to the boiling liquor any particles which may have reached the dome of the body. Inspection of the interior is provided for by means of plate glass peep holes and internal illumination by electric light.

This evaporator is used very successfully in handling black liquor in a number of different mills. In the largest installation a quadruple effect made up of bodies each 14 ft. in diameter is evaporating 350,000 gallons of black liquor daily.

There are many other makes of evaporators on the

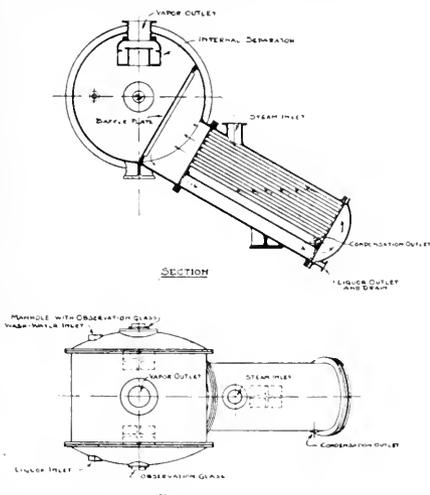


Fig. 22.—"Buflovak" Rapid Circulation, Semi-Film Evaporator. (Courtesy Buffalo Foundry & Machine Co.)

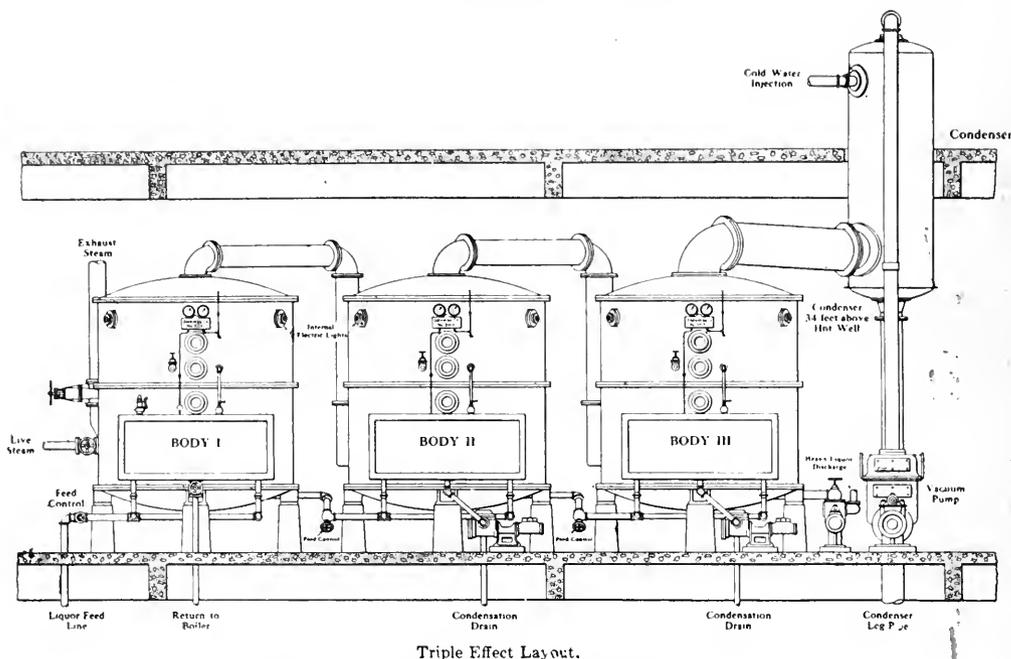


Fig. 24.—Triple Effect Lay out of Zaremba Evaporators.

market and many have been tried with more or less success for handling black liquor. A few of the more important points which should be considered in selecting an evaporator for this work are: (1) Simplicity of construction; (2) Ease of cleaning; (3) Exact level control; (4) Fast and uniform circulation.

The concentrated black liquor which is removed from the final effect by means of a pump and discharged into a tank above the incinerating furnace, seldom tests

more than 38°-40° Be., partly because it is difficult to pump more concentrated liquor and partly because of the tenacity with which liquor of this strength retains the last portions of water. It is still incapable of maintaining its own combustion but when run into a furnace, which is heated by the flames from a fire-box it very soon takes fire and adds much to the heat otherwise passing from the furnace.

(To be continued.)

WILL CANADIAN SHIPMENTS OF MECHANICAL BE FACILITATED?

Scandinavian mills know from past experience that British paper-makers look with grave suspicion on any attempt to force up wood pulp prices by agreement, and any step in this direction must direct serious attention to the possibilities of shipments from Canada. At the present time it is considered as anomalous that the price of Scandinavian pulp and imported paper, chiefly from Sweden, should be practically the same f.o.b. price. It must also be borne in mind that there is a strong feeling in favor of facilitating trade between the Mother Country and her colonies, and as the official mind seems to be anxious that our manufacturers should not be mainly dependent on foreign sources of supply — a feeling engendered by war experiences — there is the possibility of assistance from the Ministry of Shipping in promoting the export of Canadian mechanical to the United Kingdom. Again, with inflated Scandinavian prices, it is contended that the Canadian product would show a substantial saving in cost to the British papermaker.

OSWEGO-SEYBOLD CUTTING MACHINE MERGER.

The business of the Oswego Rapid-Production Cutting Machines has been purchased by Charles Seybold, President of the Seybold Machine Co. This important move by these two large concerns is the result of recent negotiations and careful arrangements to conserve the same prompt and efficient service as before, with the increased volume of business that is in hand.

Both the plants of the Oswego Machine Works at Oswego and the Seybold Machine Co. at Dayton will be fully engaged in production for some time with business actually in hand, and the present growing export business and the very large export business imminent will doubtless make further large plant additions necessary.

The trades will be glad to know of this move because it will mean further economies in production, and at the same time a conservation of all the care in construction that has made the cutting machines of these two concerns famous throughout the world.

Automatic Grindstone Dresser

Patented in the United States and Canada by Fred E. Riley, Patentee.

When groundwood pulp was first introduced as an element in the structure of the paper fabric, its advent was watched with the interest due such radical departure from the paper making art as then in vogue. After passing through the experimental stages fostered by a few long headed pioneers, it was judged a "good, cheap filler" and a multitude of manufacturers rushed to its production. Little attention was given to the quality of the groundwood pulp since it was considered simply a "Filler"; it was cheap and required little equipment for its manufacture. The real integrity of the sheet of paper rested upon the sulphite used in its composition, and the percentage used was based upon the salvage from the "Screened to Death" ground wood fibre provided. The Fathers of the Industry early saw with dismay the ever increasing rapidity with which the supply of available river wood approached the vanishing point, and the beginning of the era of ear wood and the consequent jump in cost.

The operators responsible for the actual quality of the pulp, understood fully that they were the real producers of the paper, and that the finished product and cost of same depended largely upon their skill and effort.

To offset in a measure the marked increase in cost

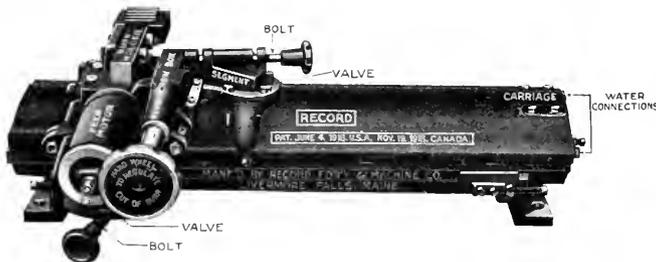
tion such as to best suit the operator's wish as to the point of contact of burr with surface of stone; that is, the relation in elevation of burr and stone. The "U" shaped base affords protection for the motor from the hot pulp, as well as an ideal support for the main carriage.

The Main Carriage is primarily a most substantial carrier for Cross Carriage, and secondly it furnishes a cover for the ways upon which it reciprocates—a most necessary provision to the life and efficiency of the machine. It also protects the operator from accidents during the dressing period.

The Cross Carriage is moved in and out by means of a motor attached to main carriage. The yoke holding the burring or dressing wheel is securely fastened to the Cross Carriage, and its alignment fixed at factory. One holder or yoke is furnished with each machine so that it need not require removal—simply change burr when needed.

The depth of cut is governed by a feed screw turned by the hand wheel shown in illustrations. The motor withdraws the burr from the stone at the end of each run across the stone, so it may be inspected and cooled while returning for the next cut.

The fluid pressure to operate both the main and cross carriage motors is distributed through passages cored in main carriage cover and in circuit with the valves shown, while the waste passes away through like passages cored in cover. This system does away with unsightly piping, and in addition to



of wood and the variable quality of same, grinders of greater producing value were installed, and stones selected for the size and uniformity of grit, as well as of strength to resist the strains to which they are subjected.

The stone to produce the greatest quantity of good pulp per hour must have a uniform cutting power, possible only when cutting speed is maintained and surface of stone is true and properly dressed. The frequency and the method of earing for stones is an operation requiring extreme skill. Since no two stones possess the same characteristics, skilled operatives must be provided with accurate machines to give the special treatment required and when required.

The "Automatic Dresser" illustrated, has been developed by men of practical experience in the art, and the results obtained are a guarantee of its merits. The construction is such as to permit ready attachment to all standard makes of grinders, and such attachment when made insures a rigid relation between the two—in fact, they are as one complete machine.

The base can be rolled in its supports in a direc-

tion such as to best suit the operator's wish as to the point of contact of burr with surface of stone; that is, the relation in elevation of burr and stone. The "U" shaped base affords protection for the motor from the hot pulp, as well as an ideal support for the main carriage.

OPERATION.—Owing to the fact that all stones to-day are being run at high speeds and "pushed" for production, they require regular treatment by well designed and perfectly mounted burring wheels, and the return travel of carriage, even though rapid, allows the "rest" required to relieve the terrific strains on the arbor when in "cut." Before starting machine new or after inactive period, oil all moving parts and repeat often. To true stone or to give it the "cut," turn on the pressure and then wait—the burr flies in till it meets the stone—thence once across—out again and then back home. While carriage is returning, the feed screw is turned to give depth of next "cut," and this turning of the screw is up to the judgment of the operator. Since the hand wheel is located well back from grinder, he can perform his duty with safety and efficiency. The turning of the feed screw is the only hand operation required.

The rate and depth of "cut" being controlled mechanically, insures marked saving of "stone" as well

as a cutting surface not possible in a hand operated machine. Mr. Riley expects soon to have his machine built in Canada.

It is durable, cleanly and reliable in operation.

The valves used are special for the machine and designed as positive in action, and to operate with little waste of power fluid.

The moving element or carriage is attached to base by nuts holding motor stem, and the removal of one nut permits the removal of carriage, should its removal be necessary.

The illustrations are of a left hand machine to dress a 30" stone, and the main carriage runs off base to the right into dead space back of grinder. By interchanging supply and waste connections, those of the burr will be in "cut" at either right or left side of stone as wished by the operator.

The right hand machine is the reverse of the left hand, the like parts being duplicated in both except the block and feed screw box, which are of opposite hand.

A system of templates has been developed insuring interchangeable parts, and parts duplicated where possible in the design, such as the two valves, cases and gearing, and the two motor piston heads and packings.

All bolts and screws are standard and can be replaced from mill store.

All vital parts are dowelled in place at factory after machine is tested, so that with the directions furnished, it may be installed by the user.

The illustrations are of an Automatic Grindstone Dresser, made by the Record Foundry & Machine Company, Livermore Falls, Maine. It is designed for the purpose, correct in principle and built along practical, mechanical lines.

PULPWOOD COSTLY IN SWEDEN.

Asked to indicate the future outlook for the Swedish pulp trade, Robert Erikson, who has been in Scandinavia for six months, is reported in the World's Paper Trade Review as saying:

"The position is this: On account of the restricted output this year the mills have not used up the 1918 logs, so they have a fair stock with which to carry on into 1919. On the other hand, the quantity they will get from the forests this year will be so small that they will not have enough for the following year, since they have to cut the logs a year in advance in order to float them down in the spring floods to the mills.

"Therefore, as they will not get a year's consumption out of the forests this winter, the quantity of logs for the immediate future is bound to be short, even if they get enough to run the next twelve months, which is doubtful.

"These conditions tend to send up the price of timber, which has risen enormously, and that, together with the higher rates of wages and costs of other raw materials, is reflected in the cost of the pulp. Before the war the cost of timber to make a ton of sulphite was roughly about 50 kr.

"According to present prices it is 200 kr. The reason for this abnormal rise is that sawn-wood goods have advanced so much, sulphite mills having to compete with the saw mills in buying logs. With the demand which will be made upon timber in the reconstruction of Europe, the price is likely to remain high for some time to come."

PULP AND PAPER EXPORTS TO ENGLAND.

In a recent issue of the Pulp and Paper Magazine it was noted that an analysis of British imports of pulp and paper made no mention of Canada. The World's Paper Trade Review, which published this analysis, has heard our complaint, and gives the following interesting information:

A full list of countries supplying the British market is not given in the monthly Board of Trade Returns, but a reference to the annual statement of the United Kingdom shows the following to be the principal imports from Canada:—

	Reel Paper.	
1917	12,658 cwts.	£15,734
1916	57,868 "	44,854
1915	90,715 "	53,766
1914	65,702 "	38,210
1913	57,686 "	31,003
Printings and Writings—not on Reels.		
1917	4,145 cwts.	£6,634
1916	9,116 "	8,768
1915	8,858 "	6,404
1914	1,573 "	1,389
1913	766 "	479
Packings and Wrappings.		
1917	50,590 cwts.	£75,119
1916	85,774 "	97,014
1915	19,612 "	18,467
1914	1,945 "	1,183
1913	992 "	664
Mill and Wood Pulp Board.		
1917	38,366 cwts.	£40,349
1916	139,626 "	80,709
1915	211,722 "	100,833
1914	169,802 "	78,718
1913	225,615 "	104,161

The following entries are given as showing United Kingdom imports of papermaking materials from Canada:—

	Bleached Chemical Pulp—Dry.	
1917	306 tons	£13,782
1916	667 "	23,933
1915	92 "	1,104
1914	— "	—
1913	267 "	3,163
Unbleached Chemical—Dry.		
1917	13,522 tons	£522,921
1916	20,381 "	717,509
1915	357 "	4,164
1914	12 "	126
Chemical Wet.		
1917	1,461 tons	£24,851
1916	4,496 "	93,650
Mechanical Wet.		
1917	2 tons	£10
1916	27,457 "	133,962
1915	37,501 "	115,469
1914	110,331 "	259,702
1913	69,090 "	156,276

Owing to the lack of import licences and shipping facilities very little paper or pulp reached this country from Canada during 1918.

The following figures show the total exports of British paper to Canada:—

1917	25,939 cwts	£102,202
1916	44,386 "	123,541
1915	73,463 "	127,879
1914	125,449 "	202,896
1913	172,158 "	265,635

ONTARIO PUBLISHERS CONSIDER COPY-RIGHT ACT.

A meeting of the book publishers and printers of Ontario was held in Toronto last week to consider the new Copyright Bill which has been introduced in the Senate. It was pointed out that the failure to insert a manufacturing clause would practically ruin the publishing industry in Canada, placing the market in the hands of the United States and English publishers. Another serious matter seems to be that no limit or time is fixed, after the original publication, when the copyright must be taken out in Canada. Through this failure the reading public may be deprived of any literary work at the author's or publisher's pleasure.

In the new bill introduced in the Senate Sir James Longheed said that it was designed to put the copyright law of Canada in such a shape that it would be possible for the Dominion to adhere to the revised convention of Berne, signed in 1908, and to which nearly all the civilized countries of the world adhered. The bill, it is contended, established a uniform period of copyright protection, consisting of the life of the author and for a period of fifty years after his death. It extends copyright protection to records and cinematograph films, and in addition to securing full copyright protection in all parts of the Empire, secures the same protection in the United States and in other countries, which have not adhered to the Berne convention.

The bill has been referred to a special committee, and, before it is again brought up, all persons interested in its provisions, will be given an opportunity to appear before the committee and be heard. The publishers and printers of Ontario will send a delegation to Ottawa at an early date to present the points raised at their meeting in Toronto.

Formerly in Canada, says the Montreal Star, there had to be registration before copyright. Now, the right "subsists in every original literary, dramatic, musical and artistic work." It becomes an automatic right, subject only to conditions of citizenship, etc. There is to be an optional registration as a simple method of proof, but such registration is not necessary.

How does the new bill affect newspapers? In the first place, whatever is copyrightable in the paper becomes protected automatically. If registration is desired, the whole paper, and not merely individual articles, can be registered. Moreover, one registration will serve to copyright all subsequent issues.

Provision is made for the rights of staff contributors to newspapers as well as for the owner of the paper. If the writer of a story or article is in the employment of another and the work is done in the course of his employment, the employer, in the absence of any agreement to the contrary, shall be the first owner of the copyright, but, again, in the absence of any agreement to the contrary, there shall be reserved to the writer himself the power to restrain other publication. Book rights, for example, will be reserved to the original writer.

There is to be no infringement of copyright if a newspaper publishes a report of a political address delivered at a public meeting. Lectures, however, can be copyrighted by notice and made immune from report, but a newspaper can give a summary of the lecture. All these provisions follow the lead of the British Act.



DR. BATES LEAVES FOREST PRODUCTS.

After a number of years' service as Superintendent of the Forest Products Laboratories of Canada, Dr. John S. Bates has resigned to enter commercial work. His new connection is with Price Bros. & Co., where his chemical engineering training and experience in connection with wood products and technical research will be a very considerable asset to that progressive organization. It will be remembered that Dr. Bates made an exhaustive study of the use of yellow pine waste before coming to Canada, and since his connection with the F.P.L. has directed many researches of interest and value to the pulp and paper industry. During the war he has rendered great service to the Imperial Munition Board in the matter of certain electro-chemical products manufactured at Shawinigan Falls.

In addition to many other pressing duties, Dr. Bates has been the energetic Chairman, and, to a large degree the inspiration of the Technical Section of the Canadian Pulp & Paper Association. More power to him!

SAVED.

Here is a joke from the American Printer that paper makers will appreciate. A New York printer ordered several hundred dollars' worth of handmade paper and, knowing stock-cutters' ways and weaknesses, and fearing they would trim off these precious edges, he wrote on the job instruction envelope, "Save deekel edges." Several days afterward a bundle was placed on his desk. "What's this?" he asked in surprise. "Oh, them's the deekel edges you ordered saved."

WOOD PULP FIGURES FOR FEBRUARY.

In connection with the Federal Trade Commission's current statistics of the paper industry a summary of the monthly reports required from manufacturers of wood pulp and other kinds of pulp used in paper making, is submitted herewith for the month of February, 1919. The table shows the kind of pulp, the stocks, production, pulp used and shipments for the month. The pulp used and the pulp shipped during each month represents only pulp produced in the es-

tablishment using or shipping same. Loss of production is shown by giving the idle machine time reported by each company for each kind of pulp.

Pulp Production.

The following is a tabulation of production, pulp used within the establishment where produced, shipments, and stocks of finished pulp, in tons of 2,000 pounds on an air dry basis, for February, 1919, for 294 operating mills:

Kind of Pulp	Finished Pulp		Tons Produced for month	Air Dry Basis		On hand end of month
	No. of Mills	On hand 1st of month		Used during month	Shipped during month	
Ground wood pulp	157	131,885	101,009	98,712	5,038	129,144
Sulphite, News Grade	63	20,551	53,576	43,417	7,142	23,568
Sulphite, Bleached	33	7,393	35,627	18,181	13,260	11,579
Sulphite, Easy Bleaching	8	2,241	5,140	3,129	1,743	2,509
Sulphite, Mitscherlich	7	1,714	6,432	4,136	2,279	1,731
Sulphate pulp	19	6,560	8,712	5,416	3,100	6,756
Soda pulp	28	4,305	27,262	15,688	10,375	5,504
Other than wood pulp	4	114	470	494	.....	90
Total of all grades	294	174,763	238,228	189,173	42,937	180,881

All known duplications have been excluded from the "Total of all Grades."

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their production, the figures show that:

Groundwood mill stocks equal about 5 weeks' output.

News grade sulphite mill stocks equal about 10 days' output.

Bleached sulphite mill stocks equal about 7 days' output.

Easy bleaching sulphite mill stocks equal about 11 days' output.

Mitscherlich sulphite mill stocks equal about 7 days' output.

Sulphate mill stocks equal about 18 days' output

Soda pulp mill stocks equal about 5 days' output.

Mill stocks of other than wood pulp equal about 4½ days' output.

Loss of Production.

The number of grinders and digesters showing lost time during the month of February in operating mills was 1,197. These figures do not include the machines in 11 mills that were not in operation at all during February, chiefly on account of lack of orders, repairs, lack of material, and lack of power. The number of hours lost for various reasons is shown in detail in the following tabulation:

Kind of Pulp	Lack of Orders		Repairs.		Other Reasons.	
	No. of Grinders & Digesters	Total Hours Idle	No. of Grinders & Digesters.	Total Hours Idle.	No. of Grinders & Digesters.	Total Hours Idle.
Groundwood	26	6,844	181	28,258	607	142,277*
Sulphite, News Grade	33	5,498	78	2,215	12	2,061
Sulphite, Bleached	18	1,829	30	2,856	22	1,448
Sulphite, Easy Bleaching	6	797	0	0	0	0
Sulphite, Mitscherlich	0	0	15	1,611	7	458
Sulphate pulp	23	6,096	1	552	16	3,869
Soda pulp	21	3,066	28	1,944	67	6,030
Other than wood pulp	0	0	4	78	2	438
Total	127	24,130	337	37,514	733	156,581

*Includes 106,560 hours due to low water, 19,024 hours due to anchor ice, and 3,731 hours due to lack of power.

REST PERIODS FOR INDUSTRIAL WORKERS.

Research Report No. 13, National Industrial Conference Board, presents the experience of leading American establishments with "rest pauses," giving an idea of the extent to which systematic recesses in the day's work have been used in this country. This report also indicates how far such pauses are desirable from the standpoint of health and of industrial efficiency. Copies may be purchased from the Board, 15 Beacon Street, Boston, Mass. Price, \$1.00.

DON'T OIL THE FLOOR.

One of the Crown Willamette employees writes "Makin' Paper" as follows: "When 'kids' we were told to 'save your pennies, the dollars will take care of themselves'. How about applying this motto to our oil consumption? 'Boys, save the drops of oil, the gallons will take care of themselves.' Don't oil the frames, stands, floors, etc., but put just enough on the bearings to keep the machinery running smoothly."



UNITED STATES NOTES

Users of dyes, chemicals, fertilizers, and other products originated by German science were notified last week by the Alien Property Custodian that importations from Germany hereafter would be subject to prosecution as infringement of patents licensed under the Trading with the Enemy Act for use by American manufacturers. This decision blocks effectually any attempts that might be made to dump great surplus stocks which Germany was reported to have accumulated with the intention of underselling and perhaps stifling the new American industries in the same lines. Alien Property Custodian Garvan, in a letter to Burwell S. Cutler, Chief of the Bureau of Foreign and Domestic Commerce, said that all of the 400 German dye and chemical patents have been seized by the Alien Property Custodian and sold to the Chemical Foundation. The Chemical Foundation is to use these patents to prevent interference by the Germans after the war with the American industries to which they relate. The patents will be available under license regulations. The office of the Foundation is at 81 Fulton St., New York.

George C. Sherman, president of the Taggart's Paper Company, a distinguished Democrat and philanthropist of Watertown, N.Y., has been named by Governor Smith to succeed the late Hendricks S. Holden as a trustee of the New York State College of Forestry at Syracuse University. Mr. Sherman, who is particularly familiar with forestry problems, having studied the subject in a practical and scientific manner for many years, can be depended upon to devote his attention to the duties of the office with a characteristic zeal that will demonstrate his high value to the school and to the problems confronted. The general expression of opinion on the appointment of Mr. Sherman is that no better selection could have been made.

The Board of Directors of the International Paper Company have declared a regular quarterly dividend of one and one half per cent on the company's preferred stock for the quarter ending March 31st, 1919.

A conference relative to standardization was held last week in Washington between representatives of the Industrial Co-operation Service of the Department of Commerce and representatives of the glazed and fancy paper and cardboard manufacturers. Those present at the conference included: G. Frank Meriam, of the Glazed and Fancy Paper Manufacturers and the Cardboard Manufacturers; I. O. Van Duzer, of the Glazed and Fancy Paper Manufacturers; S. A. Smith, of the Cardboard Manufacturers' Association; Mr. Durgin, chief of the paper laboratory of the Bureau of Standards, and Messrs. Cutter and Lemihan, of the Industrial Service. It is believed that as a result of the meeting the Secretary of Commerce will write a letter endorsing in some measure at least the ideas which were presented by the paper men. Among the recommendations made by Mr. Meriam and others were a request that the number of shades be reduced, and that by having a standardized thickness many advantages might be afforded.

Frank C. Baker, owner and publisher of the Tacoma, Washington, "Ledger and News-Tribune," who is largely interested in the Cascade Paper Company, has announced that negotiations for the financing and construction of a \$600,000 book paper mill at Tacoma, have been completed. The new mill, which will be built by the Cascade Paper Company, is to have a capacity of 20 tons of high grade book paper daily, and is the first paper mill of any kind to be established on the Pacific Coast since the signing of the armistice.

A certificate of incorporation has been granted to the Burnside Tissue Mills, Inc., recently organized with Nathan G. Read, who several weeks ago acquired the old Walker paper mill at Burnside, Conn., as one of the principal stockholders. The new concern will manufacture lightweight papers which will include tissues, napkins, etc. Mr. Read states that in no sense will the product of the Burnside mills be competitive with that of the Japanese Tissue Mills, of which concern he is vice-president. The amount of the capital stock subscribed for the new company is \$51,200. Francis W. Cole, former corporation counsel of Hartford, Conn., is secretary of the new corporation.

The American Strawboard Company's property in North Dayton, Ohio, has been sold to Mrs. Amie G. Gorman, for a reported consideration of \$25,000, and will be used for welfare purposes. Following a fire and adverse market conditions, the company's property has been in disuse for several years past. It was at one time a splendid going concern and a money maker.

The National City Bank of New York in a recent compilation shows that exports of dyestuffs from the United States to Australia in 1917 amounted to \$72,500, as compared with \$16,725 in the preceding year. This, says the bank's statement, illustrates the promptness with which the world responded to the development of the dyestuff industry in the United States. It is shown by the bank's figures that not only were the dyestuff manufacturers of America equal to the task of providing their own country with the supplies which could no longer be obtained from Germany, but they were able to some extent to ship a part of their manufactures to other countries. In 1914, the exportation of dyestuffs from the United States was, all told, but \$356,919. In 1915, \$1,177,925 was sent out, and in 1918 total exportations were represented in round figures by \$16,922,000.

Brigadier-General J. B. White, of Montreal, who is pulp wood and saw mill manager of the Riordon Pulp and Paper Co., and had charge of the forestry operations of the Canadian corps in France during the war, addressed a well attended meeting recently of the Engineers' Club in Montreal, on the important part that timber played in the winning of the European conflict, where Canadians produced two million tons of timber. He stated that had it not been for the foresight of the French people in conserving their forests and producing new forests the war would have been lost.

Technical Section

NEW MEMBERS AND MEMBERS' NEWS.

The Technical Section continues to show a healthy growth, although if each member were represented as a pound, one could hardly say the body had reached a state of obesity. Members recently elected are: C. D. Jentz, St. Maurice Pulp and Paper Co.; H. J. C. Chapman, Abitibi Power & Paper Co.; R. W. Arvesen, Belgo-Canadian Pulp & Paper Co.; Henry C. Carruth, Mead Paper Co., Dayton, Ohio, and Theo. F. Spear, Brompton Pulp & Paper Co.

Mr. H. Grindstadt, of Ocean Falls, B.C., has sent the Secretary a postcard showing a very exciting ski jumping contest which he may have been witnessing in Norway. Mr. Grindstadt expects to return about the middle of the month, and there is some likelihood that he has entered a perpetual partnership. Well, Ocean Falls is a delightful place to keep house.

Sapper Andrew Christensen, former superintendent of the sulphite department at Ocean Falls, is now residing in Kimmel Camp Park as a member of the Canadian Engineers. He expects to be detained there for some time.

REVIEW OF RECENT LITERATURE.

A-7. Thermal dissociation of sulfur dioxide. J. B. Ferguson, *J. Am. Chem. Soc.* **41**, 69-72 (1918). From the equilibrium constant for the reduction of SO_2 by CO and that for the dissociation of CO_2 , F. calculates the thermal dissociation of SO_2 from 1000 to 1500° and from 1 to 0.001 atmosphere. It is found to be somewhat less than that of either H_2O or CO_2 .—*Chem. Abs.*

A-7. Sodium sulfide and other products from niter cake. H. P. Bassett, *Chem. Met. Eng.* **19**, 790 (1918). A discussion of some of the methods that have been proposed for the utilization of niter cake, e.g., the production of Na_2SO_4 by neutralizing with CaO ; the manufacture of HCl , HNO_3 , and H_2SO_4 , etc. The author considers the production of Na_2S as the best solution of the problem, and suggests that the partial oxidation taking place in Berthier's method be obviated by using C in the form of bituminous coal. The volatile matter given off keeps the furnace (of a special, air-tight design) full of reducing atmosphere. This reaction does not require a high temperature, 96% conversion being obtained at 650° in a cast or wrought iron tube furnace. Means must be provided for cooling the material as discharged from the furnace out of contact with the air. As the added C is in excess of that required for the reduction, the cinder will contain some free C and will require leaching and crystallizing to recover the Na_2S in marketable form.—*Chem. Abs.*

A-12. Production of turpentine and rosin in India. Anon. *Drugs, Oils and Paints* **34**, 124 (1918).—The botanical varieties of pine trees, rosin and turpentine, and the distribution and area of the forests in India, are given.—*Chem. Abs.*

A-14. Device for testing the tearing strength of paper. R. O. Wood, Brookline, assignor to A. D. Little, Inc. U. S. Pat. 1,273,972, *J.S.C.L.* **37**, No. 21 (1918).—The sheet of fibrous material is held firmly along a straight-edge, and means provided for moving a lever connected with a gripping device up an inclined plane at an angle to the base-plane of the

straight-edge, the force required to move the lever so as to tear the sheet being indicated upon a pressure gauge.—D. E. S.

A-14. The art of determining the composition of papers. (*L'art d'établir la composition des papiers*). E. Arnould, *Le Papier*, 1918, **21**, p. 181. The paper mill superintendent should be thoroughly familiar with the properties of all the various kinds and grades of stock, and of the other raw materials which enter into the composition of paper. He should be in a position to determine the composition of any sample submitted to him, by physical, chemical and microscopic examination, to duplicate it with suitable materials, and to determine the cost of production in his mill. This is relatively simple in the case of lower grade papers, but becomes a very difficult matter when dealing with high grade papers, requiring years of practical experience and a fair amount of technical knowledge. (See also *Paper*, Mar. 26).—A. P. C.

A-0. Standard methods of analysis. *Pulp & Paper M.* **17**, No. 4, p. 75. The tentative methods of analysis of raw materials as submitted to the Technical Section of the Canadian Pulp and Paper Association are given.—R. C.

D-4. Mechanical wood pulp. (*Les pates mecaniques de bois*). P. Rochon, *Le Papier*, **21**, p. 202, (1918); continued from p. 165. A description of horizontal and vertical grinders and their respective advantages, and of the conditions which ensure the best results. (To be continued).—A. P. C.

D-0. Process and means for producing all-wood paper (making ground wood). Anon. *J. S. C. I.*, **37**, No. 22 (1918). A U. S. Pat. 1,277,737 granted to A. H. Lefebvre, Watertown, N.Y. Wood is ground to produce a mixture of fine fibrous material and partially reduced material, the pulp from the grinder is passed through a scrubbing tank and then through a hydrostatic gravity separator, in which the foreign matters are separated; the cleaned material is then screened and the portions which are rejected by the screens are treated in a refiner to produce a relatively coarse fibrous pulp which is mixed with the pulp coming from the original grinder, so that it again passes through the grading system.—D. E. S.

D-0. The manufacture of groundwood pulp. G. W. Dickson, Riordon Pulp and Paper Co., *Pulp and Paper*, **17**, No. 1, p. 3; No. 2, p. 30.—The principal subjects covered are the history of the process, various types of grinders and the stones used in them, the subsequent treatment of the pulp until its finished form is reached, the variables affecting the product, its use, modifications of the usual process, and power requirements.—R. C.

D-0. Cellulose substitute. A. N. Anderson and C. Vig. Norway, 28,771, Apr. 29, 1918. Wood pulp is ground, the long fibers separated and treated chemically at a comparatively low temperature and finally passed through a crusher.—*Chem. Abs.*

E-2. Alcohol and other products from waste sulfite liquor. R. H. McKee. U. S. 1,284,739, Nov. 12. Waste sulfite liquor is purified by treating it with BaCO_3 under oxidizing conditions, thus forming a sludge containing BaSO_4 and, after separating the sludge, the purified liquor is fermented and distilled to obtain alcohol. The sludge is furnaceed under reducing conditions to obtain BaS and the latter is then

converted into BaCO_3 by treating it under pressure with CO_2 from the fermentation vats.—Chem. Abs.

E-2. Decomposing sulfite waste to extract organic and inorganic materials. T. R. Strehlenert, Norw. 28, 641, Mar. 11, 1918.—In a modification of the process of 24,140, the waste is evaporated to 90% of its volume before decomposing, so that a portion of the lime salt is precipitated, and the combined SO_2 is liberated thereby facilitating precipitation and increasing the yield of dry product.

Norw. 28,655, Mar. 11, 1918. In a modification of the process of 24,140, the SO_2 is converted into SO_3 in the presence of small quantities of H_2SO_4 .

R. W. Strehlenert, Swed. 43,860, Apr. 3, 1918.—The lye is heated in an autoclave under high pressure produced by the introduction of SO_2 in such amount that its partial pressure is greater than that of the steam pressure at the prevailing temperature, whereby H_2SO_4 required for the reaction is formed by oxidation of the H_2SO_3 .—Chem. Abs.

E-2. Crops for the production of power alcohol. W. R. Grimwade, Commonwealth of Australia, Advisory Council of Sci. and Ind., Bull. 7, 153-61 (1918).—The importance of alcohol as a substitute for gasoline is pointed out, and data are presented regarding price, source and production of alcohol. The factors influencing the selection of a crop for its production are fully outlined, and stress is placed upon the fact that the commercial success of the industry rests mostly with the proper choice of the crop.—Chem. Abs.

E-0, F-0. Digester and associated apparatus for the manufacture of cellulose. E. Schanffelberger, U. S. 1,282,635, Oct. 22.—The apparatus is especially adapted for the manufacture of pulp from wood, bamboo or esparto.—Chem. Abs.

F-4. Recovering alkali and other substances in cellulose production. O. G. Stage, Can. 187,316, Nov. 5, 1918.—The strong black liquor is withdrawn from the cellulose digester and replaced with a weak liquor which washes the pulp; then both the strong and weak liquors are transferred to the furnace for use as fuel therein under heat and pressure without exposure to the air.—Chem. Abs.

F-5. Process of producing soda cellulose particularly wood cellulose. Aktiebolaget Cellulosa, Stockholm, Via J. S. C. I. 37, No. 21 (1918), English Pat. No. 116,288.—Wood is digested with caustic soda without the use of sulphide by carrying out the process in the presence of a contact substance favoring reduction. Mercury is especially suitable for this purpose. The digestion liquor employed is weaker than that commonly used, and should contain about 60 grams of Na_2O as caustic soda per liter. To maintain this dilution and provide sufficient alkali for digestion, the wood may either be boiled with about double the usual quantity of lye or a portion of strong caustic lye may be added later in the process when the initial portion is exhausted. The principal extraction of the incrusting substances should take place at a temperature not exceeding 170°C ., and the process may be accelerated by the application of air pressure.—D. E. S.

F-5. Digesting cellulosic materials with sulfate liquor. O. G. Stage, U. S. 1,279,604, Sept. 24.—After treating wood chips or similar cellulosic materials with a solution of Na_2SO_4 , NaOH , Na_2S , Na_2CO_3 in a digester, part of the black liquor is withdrawn, weak liquor is introduced into the digester to replace the liquor withdrawn, the pulp in the digester is washed

by the liquor thus weakened, and the liquors are all preserved under digester heat and pressure to maintain them in condition for subsequent burning without loss.—Chem. Abs.

H-5. Treating lignocellulose preliminary to bleaching. A. R. de Vains and J. F. T. Peterson, Holland, 2,395, Apr. 2, 1918.—Cellulose is treated with a solution of Cl water, then with H_2O alone, and finally with a slightly alkaline solution.—Chem. Abs.

H-5. Method and apparatus for bleaching paper pulp. Anon. J. S. C. I., U. S. Pat. 1,277,926 granted to J. E. Heiskanen, Canton, N.C.—The pulp is treated in a series of circulating units, each consisting of a pair of vertical tanks, the bottoms of which taper to a connecting passage in which a propeller is situated. Adjustable means are provided whereby a portion of the pulp circulating in each unit is allowed continuously to flow over into the next unit of the series, whilst the remainder is returned to the tanks from which it was propelled, the amount of pulp continuously passing over from each unit to the next being equal to the amount continuously fed into the apparatus.—D. E. S.

H-5 Refining wood pulp. (Bleaching.) V. Drewsen, U.S. 1,283,113, Oct. 29. Pine, spruce or similar soda or sulfate process wood pulp is refined to render it suitable for the manufacture of nitrocellulose or other uses by bleaching for several hours with an aqueous solution containing 2-8% Cl calculated on the dry weight of the pulp and then treating the yellow partially bleached product thus obtained with Na_2CO_3 solution under pressure for several hours. The solubility of the pulp in KOH is reduced to less than 7%.—Chem. Abs.

K-6. Fiber for paper-making. C. Beadle, U. S. 1,286,502, Dec. 3.—Fibrous material such as freshly cut stems of *Hedychium coronarium* are prepared for the manufacture of unbleached paper by treatment with an alkaline solution, e.g., a solution of NaOH , at atmosphere pressure, and at a temperature below the boiling point, while simultaneously disintegrating the fibers by a beating operation. Organic substances are retained which are usually removed by a washing process, and these processes serve to increase the weight of the product.—Chem. Abs.

K-6. Paper Pulp (from Papyrus). J. Wells, Brit. 120,086, Oct. 24, 1917.—Material for the production of paper is obtained by heating previously dried and matured papyrus with lime water at temperatures not substantially exceeding 100° . Either the dried and mature stalks may be treated, or the inner fiber and pith obtained from such stalks.—Chem. Abs.

K-6. Process and apparatus to make paper stock from dead leaves and other vegetable matter. (Procédé et appareil permettant de faire de la pâte à papier en partant de feuilles mortes et autres matières végétales). La Papier, 21, p. 210 (1918). French patent No. 488,940, granted to Mrs. K. Bramson (nee Adeler), Seine, France.—A. P. C.

K-12. Improvements to paper machines. (Perfectionnements aux machines à fabriquer le papier). Le Papier, 1918, 21, p. 210. French patent No. 488,907, granted to Wm. Alex. Aitken, England. The patent covers a device whereby the suction-boxes are made to oscillate about their longitudinal axis.—A. P. C.

This would be a grand old word if everybody paid their bills as cheerfully as they pay grudges.

PULP AND PAPER NEWS

A federal charter has been granted to Clarke Brothers, Limited, of Bear River, N.S., with a capital stock of \$1,500,000. Very wide powers are granted the organization, which heretofore has been known as Clarke Bros., and among them is to manufacture and deal in pulp and paper.

J. C. Kirkwood, former editor of Printer and Publisher, Toronto, and for some months past identified with the Canadian Press Association as assistant manager, has gone to England, where he will take charge of the publications and publicity for the Federation of British Industries. Mr. Kirkwood has written several books on advertising and sales topics, and his many friends in the publishing and paper business will wish him every success in his new post, which is a responsible one.

A charter has been granted to the McLaurin Lumber Co., Montreal, with a capital stock of \$100,000 to take over the business conducted by John R. McLaurin. The new company is authorized to manufacture and deal in pulp wood and all articles made in whole or in part in wood or any of its products.

The annual meeting of the Ontario Pulp and Paper Makers' Safety Association, of which A. P. Costigane of Toronto, is secretary and engineer, and J. H. Weldon, of Toronto, President, will be held in the board room of the Provincial Pulp and Paper Mills Co., Toronto, on Tuesday, April 15, at 2.30 p.m., when the annual reports for the past year will be submitted and officers elected for the next twelve months.

Major General Alex McDougall, former director general of timber operations in England and France, and his brothers, Col. Kenneth McDougall and Sam McDougall, of Ottawa, intend going into the timber and pulp wood business. They have secured an option on a tract of land in the province of Quebec, which consists of 620 square miles. The land is on the north bank of the St. Lawrence, about 260 miles northeast of Quebec, and is richly wooded with timber, which will yield large quantities of pulp wood.

The capital stock of the Mattagami Pulp and Paper Co., whose head offices are in Toronto, and whose sulphite pulp mill is at Smooth Rock Falls, Ont., has been increased by letters patent from four million to seven million dollars by the creation of 30,000 shares of new stock of \$100 each. The plant of the company is busy and an additional drying machine and extra barkers are being installed as well as other improvements carried out.

A. E. Millington, who for the past two years has been manager of the Whalen Pulp and Paper Mills at Swanson Bay, B.C., has retired from that position and has been succeeded by K. J. Carney as acting resident manager. Mr. Millington, who some years ago was superintendent of the pulp plant of the Spanish River Pulp and Paper Mills at Espanola, was presented with a diamond pin on behalf of the superintendents and foremen of the Whalen Co. He expressed his appreciation of the loyalty and co-opera-

tion extended him during his tenure of the management. Fred Fielding, superintendent of the pulp plant, made the presentation.

Major J. P. Fitzgerald, formerly on the editorial staff of the Toronto Telegram, who went overseas with the 180th (Sportsmen's) Battalion, and saw several years' service in France, returned last week on the Royal George, and will resume his former newspaper position. He will be banqueted at an early date by the Sportsmen's Association.

J. O. Herity, proprietor of the "Ontario," Belleville, was in Toronto during the past week attending the annual meeting of the Ontario Associated Boards of Trade. Among the resolutions carried was one reaffirming one passed in 1912, supporting a project for the development of the French river waterway connecting Lake Nipissing with the Great Lakes, and urging the Federal Government to make provision for the commencement of the work in the 1919 estimates. It is stated that the new route would open up immense pulp wood and other resources, and it is estimated that 35,000 horse power can be developed at three locks, and that the sale of the power to Northern Ontario industries such as pulp and paper mills, and mining developments, would pay the interest on the cost of construction of the waterway, which is placed at eighteen millions.

At the annual meeting of the F. N. Burt Co., Limited, held in Toronto recently, a very satisfactory report was presented. The profits exceeded those of the previous year by \$100,377, and totalled \$470,376. After deducting the transfers to Reserves, the amount written off Patent Account, and dividend payments on the preference and common shares, the balance in profit and loss account has been increased by \$103,919, and now stands at \$376,783. The balance is subject to deduction of the United States Excess Profits Tax on the 1918 earnings of the Buffalo business, the amount of which cannot be ascertained as yet. A Reserve of \$40,000 has been set aside to provide for income taxes in both the United States and Canada. The company manufacture sales books and kindred lines. S. J. Moore, of Toronto, was re-elected President of the Company, and all the old officers were re-appointed. The dividend on the preferred stock was advanced from a six per cent to an eight per cent basis, and the report presented was the best in the history of the company.

The Rudd Paper Box Co. of Toronto, have recently issued some attractive advertising literature in the interest of the waxed board carton, and also emphasizing the selling value of suitable packages for all lines of goods.

The many friends of Arthur D. Huff, for many years the transportation expert of the Laurentide Co., will sympathize with him in the loss of his father, Rev. D. Lucas Huff, who died last week in Haileybury, at the advanced age of 87.



The Markets

CANADIAN MARKETS.

Toronto, April 3.—The market in the pulp and paper line continues spotty, and some firms report good business, while others declare conditions of trade are quiet. There are so many disturbing factors that business will not likely settle down to a fair, steady going basis until the peace terms are signed in Europe, and it is found out what the fiscal policy of the Federal Government is going to be, and what other legislation will be enacted so far as income assessment and the tariff is concerned.

So far as pulp and paper is concerned, it is not thought that a revised fiscal policy would interfere materially with the industry, but it might play havoc with other lines of paper.

Speaking in the House of Commons on the McMaster amendment to the tariff, F. N. McCrea, M.P., President of the Brompton Pulp and Paper Co. of East Angus, Que., who opposed the amendment, stated that he was a manufacturer, and would be only too glad to have free trade in his own line of business, but, if there was going to be free trade, it should be uniform. Some Canadian industries were not prepared to compete against the world, the same as the pulp and paper industry. Prices in all lines of paper are holding up, but many plants are operating to reduced capacity. During the past week most encouraging news in the pulp and paper line has come to hand. One is the new ruling of the Canadian Trade Commission under which it will be possible for Canada to resume exportation of wood pulp to Mexico, and another is that a ship has just left Halifax with a full cargo of pulp for England, which constitutes a record during the past two years. While many shipments of pulp have been sent over of late, this is the first full cargo. It consisted of 4,583 tons, about half being mechanical pulp from Nova Scotia plants, and the remainder sulphite pulp from Ontario mills.

In Quebec some of the mechanical pulp plants are suffering from low water and are running only to part capacity. Buying from the United States has fallen off and stocks are piling up. Purchasing is, therefore, from hand to mouth, but the prospects are encouraging. The British control of paper will be lifted,

ed, it is announced, by the end of April, and import licenses will allow up to seventy-five per cent. of pre war amounts. The action of the British authorities is very satisfactory to the daily and periodical press of the Old Land, as the regulations have been very stringent. The demand for pulp as well as paper from England and the Continent is steadily increasing, and with the opening of navigation, providing steamers can be obtained freely, there should be no difficulty in disposing of the surplus output of Canadian mills, as well as the stocks on hand. Many tons of sulphite pulp are now going forward. It is believed that very soon the requisitions from the United States for pulp will increase as each week sees an improvement across the border in the paper business, which has been very quiet and stocks are low.

Envelope factories are busy, and so are concerns making fancy lines of stationery. The business, which was done at Christmas time the past year exceeded all expectations, and the houses catering to this trade do not purpose being caught short next holiday season. Paper box plants are fairly busy in the set up and folding box line, but mills making corrugated boxes are quiet. There is an ever widening demand for cartons of all kinds, and during the war the use of tin and other metal receptacles was so expensive that many turned to waxed paper and board packages of one kind and another. There is still some prejudice to overcome in this line. Tea houses, which for years used the lead package, have found that it was easily broken or torn, and are now substituting another package in the shape of the waxed board carton, which is stronger, more secure and completely air tight. Now the coffee and cocoa houses, which have employed tins, are going to use waxed board containers, although the public has become seized of the idea that, unless coffee and cocoa are put up in tins the contents will lose some of their flavor. This is a mistake, and the organizations, which are adopting the board container, hope in a short while to banish the idea that tin is necessary. To-day more manufacturers of various lines of products than ever are using different styles of cartons, and set up earboard boxes. They recognize the economy, utility and cleanliness of such means. This

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES 2074 MURRAY HILL, NEW YORK
2075

We are always in the market
and ready to pay good prices
for

SULPHITES

Bleached and Unbleached of
Canadian manufacture.
Write and let us show you
what we can do.

is bound to make additional business for the paper box concerns, and the board mills, who report that the prospects for the coming year are very bright.

In the rag and paper stock market the cheaper grades are moving slowly, but there is no demand for the expensive lines, and quotations are in some cases merely nominal. Board mills are buying lightly and adopting a conservative policy. In rags there is very little moving, and the demand is quiet. It is hoped by the dealers that there will soon be some improvement. Prices on all lines of cuttings and roofing stock have dropped considerably during the past few days.

The demand for newsprint continues brisk, and the big daily papers are larger than ever, as advertising has been extensive this spring. It is interesting to note that in spite of the hundreds of newspapers which have gone to the wall during the past two years or have merged with others, owing to the high cost of newsprint and general overhead expenses, there are rumors that more ventures are to be made. An Ontario town which has three newspapers, will, it is stated, shortly have another, and one city in the East already served by four editions (two morning and two evening), may have another rival, while in a Western Canadian city, a fourth daily is announced, in spite of the fact that three have been in the field for some years, and one of them, at least, has had a difficult struggle. The United Farmers of Ontario, who talked of a daily paper in their behalf, are more sensible than some persons engaged in the publishing world, and are content with the acquiring of an established agricultural weekly, instead of launching a new publication in an already overcrowded field.

The question was often asked by newsprint manufacturers which would come to an end first, the print paper investigation in Canada or the war, and the war won out. Now the interrogation is looming up which next will terminate first, the signing of the Peace terms or the newsprint probe? The former is likely to prove a victor from present appearances, as the present figure of \$69 may go until the end of May. In the meantime, the people of the Dominion foot the bill and the industry suffers, for no construction work or enlargements will be undertaken until the ban of federal regulation and price control is removed.

Wax paper manufacturers are busy at present, and report that requisitions from bakers for paper to seal their loaves are again coming to the front. During the war wrapping bread was forbidden by the Food Control Board, but now the bread manufacturer may do as he pleases, and the demand for the enclosed loaf is widening. When the regulation of no wrapping was enforced, wax paper firms turned their attention to other directions, and built up a splendid business. Necessity in their case proved the mother of invention, and education, and with bread wrapping coming back, the industries in the wax paper line will be busier than ever. A dozen years ago there was only one firm in Canada making wax paper, and the process of arousing the public and manufacturers of various commodities to the use of this air tight and water tight wrapping was slow. Of late years the demand has grown greatly, and there are now seven or eight plants, and there is business for all of them.

Rag and Paper Stock Prices.

No. 1 white envelope cuttings	\$5.25
No. 1 soft white shavings	\$4.00
White Blanks	\$1.15

Heavy Ledger Stock	\$2.50
No. 1 magazine	\$1.50
No. 1 book stock	\$1.30
No. 1 manilas	\$2.10
No. 1 print manila	\$1.20
Folded news	75c
Over-issue news	90c
Kraft	\$4.00
No. 1 clean mixed papers	60c
No. 1 shirt cuttings	9½c
No. 1 unbleached cotton cuttings	8½c
No. 1 fancy shirt cuttings	7c
No. 1 blue overall cuttings	6c
Bleached shoe clip	7c
White cotton hosiery cuttings	8c
Light colored hosiery cuttings	7c
New light flannellette cuttings	6½c
No. 2 white shirt cuttings	8c
City thirds and blues (repacked)	2½c
Flock and satinettes	1.75c
Tailor rags	1.65c

NEW YORK MARKETS.

New York, March 29.—Gradually but steadily the market for paper is taking on new life. Indications are that a greater volume of business has been transacted this week than during any similar length of time for some months, and the beauty of the improvement in the market is that it covers practically every grade of paper, and that the increased demand is of the healthiest character. Domestic consumers have purchased with greater freedom, and demand from export sources has undergone consistent expansion. The most actively sought grades, comparatively speaking, are news and book. This is doubtless due largely to the fact that there is an advertising boom on, and that publishers of daily newspapers and current periodicals are being compelled to enlarge the size of their publications, with the result that the consumption of paper of these descriptions is growing day by day.

It is the opinion of representative members of the trade that the market will continue to assume a more active complexion in a gradual way. Few, if any, look for any sudden developments in the way of an overnight demand, for it is felt that buyers will pursue a conservative policy and will broaden the scope of their operations as their requirements warrant. That activity lies ahead of the market, however, no one questions. The belief is expressed on all sides that a very large consumption of paper of most every grade will prevail during the forthcoming months, and, in view of the fact that jobbers and users generally have light stocks now on hand, it is expected that buying will reach broad proportions. Illustrative of the increasing consumption may be cited the instance of a well known weekly farm paper which within the past two months has doubled in size by reason of a corresponding increase in advertisements. In other words, this newspaper, which several months ago ran about forty pages, is now printing eighty pages. Magazines as well as steadily adding page after page with each succeeding issue, which is being reflected by a much larger movement of paper.

Newsprint mills are operating at very near to capacity and are shipping the great bulk of their output virtually as soon as it becomes available. Prices are firmly maintained, and there has been a stronger

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WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

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tone in the market, which is attributed in part to the refusal of the Federal Trade Commission to grant the request of newspaper publishing interests to reopen its investigation of newsprint paper costs and prices.

Book papers also are moving in increasing volume, and at stronger prices. Consumers in frequent cases are finding it necessary to seek additional lots of paper in the open market to augment their contract supplies, with the result that a growing transient business is passing. Fine papers are in better demand, though it is noticeable that buyers are still confining their purchases of writing paper largely to the cheaper qualities. Tissues are firm and are sought in moderately large quantity. No. 1 white is selling at between \$1.15 and \$1.25, while No. 2 white and manila tissue are quotable at \$1.00 to \$1.10. Wrapping papers are rather quiet. There is a fair call for them, but most of the business current is on contract, and the aggregate movement is of less than normal volume for this season of the year. As the Easter season draws nigh, however, it is expected demand will expand.

The market for boards is decidedly more active, and prices have advanced. Mills are running on longer schedule than for some weeks, and are not occasioning the difficulty in disposing of their product that they have recently been up against. Chip board is selling at \$38 to \$40 per ton, while news is quoted at \$40 to \$45, and binder board at around \$70.

GROUND WOOD.—A routine trade of comparatively small volume is passing in mechanical pulp. Consumers are buying in a restricted manner, generally absorbing only such tonnages as they require to fill out their contract supplies, and, in the absence of important demand, prices are gradually declining to weaker levels. Between \$25 and \$26 per ton at the grinding mill is the present range of quotations, and consumers are experiencing no trouble in covering their wants at the lower edge of quoted values. Indications are, however, that surplus stocks of ground wood are not as large as some have made them out to be, and an advance in prices would not surprise most members of the trade. In fact, predictions are made that values will rise, owing to the shortage of wood.

CHEMICAL PULP.—Business in chemical pulp this week has involved a comparatively small amount of material. Inquiry has been more active, but those consumers showing interest have done no buying of a substantial character, presumably having their immediate needs provided for and inquiring merely to get a line on prices and conditions. There is an easy tone to prices on domestic pulps. This is not surprising in view of the long period of quietness the market has passed through, and yet sellers are not pressing their offers and appear to be satisfied to await the entrance of consumers into the market as buyers before endeavoring to do business. It is apparently realized that efforts to stimulate buying at present would likely have just the opposite effect, and dealers in domestic pulp and importers consequently are pursuing a waiting policy.

RAGS.—The situation in rags remains practically the same as previously reported. Sales are being made, but manufacturers are purchasing in hand to mouth fashion, and evince little or no desire to anticipate their needs ahead. Most of those actually in the market for supplies seek to buy at concessions

in price and are frequently refusing to meet the figures asked by dealers. Repacked thirds and blues, probably the most active description of stock, are selling to mills at around \$3.25 f.o.b. New York, while old No. 1 whites are quotable at \$5.50 and new white shirt cuttings of No. 1 grade at \$10.00 to \$10.50. Roofing rags are in poor demand, owing to the fact that felt mills have little business, and are running only on part time schedule.

PAPER STOCK.—Increased activity has prevailed in the market for the low grades of old paper this week, and prices in one or two instances have advanced. Box board mills have bought with considerably more freedom and in larger volume, and sellers of such grades as No. 1 mixed paper, folded news, manilas and similar descriptions of waste paper have occasioned no difficulty in finding a market for the bulk of their output. No. 1 mixed paper has sold at 45 cents per 100 pounds New York, and the market has firmed to the point where it is doubtful whether sizable tonnages of mixed paper can now be secured under this price level. Folded news is selling at 60 cents f.o.b. New York, and slightly higher, and while there isn't quite the demand that exists for mixed paper, there is a sufficiently large movement to be creative of firmness in quotations. Books and magazines are quoted at around \$1.30 New York to mills, and are sought in fair volume, while kraft paper has strengthened in price slightly under a broader call from consuming quarters. No. 1 kraft is now held at \$2.15 to \$2.25 per 100 pounds New York. Shavings are in slight demand, and quotably lower. Be-



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tween \$4.70 and \$4.90 is the current market for No. 1 hard white shavings, while soft whites of No. 1 quality are priced at around \$3.75.

BAGGING AND ROPE.—No fresh activity of an important character is noted in the market for scrap bagging and old rope. Domestic manila rope is off a bit in price, owing to a slowing up of demand from consumers and increased arrivals of foreign rope, and offerings at \$4.50 to \$4.75 per 100 pounds are reported, with few takers. Manufacturers apparently are holding back in buying in anticipation of a further decline in values as receipts from abroad increase. Scrap bagging is sought only in restricted amounts, with dealers quoting at a basis of \$2.25 to \$2.50 f.o.b. New York for No. 1 packing.

THE EXPANSION OF A GREAT INDUSTRY.

In twenty-five years the value of the output of the pulp and paper industry in Canada had become 11 times greater than it was. Probably at the prevailing rate of development the consumption of pulp-wood in 1928 would be at least 3 1-4 times that of 1916, ten times greater than in 1904, or 5,500,000 cords per annum. At this rate the remaining supply would be 121,000,000 cords, or, without allowing for further supply, would be 121,000,000 cords, or, without allowing for further increase, sufficient only for 22 years more. Commenting on the plain need for regrowth and reforestation, Mr. Campbell suggested that the returned soldiers might be employed to advantage on the planting of trees.

LARGER FACILITIES FOR RESEARCH WORK.

Now that the war is over, there is a general expression of opinion that arrangements should be made by the Federal authorities to extend the work and scope of the Forest Products Laboratories of Canada. There is pressing need for the study of the great natural resources of the Dominion, and for the extension of an adequate research program. The investigative work has been hampered during the past four years owing to the enlistment of so many members of the staff for overseas service. It was originally intended, when the Laboratories were opened five years ago, in Montreal, that they should move to a permanent building in 1918, designed to suit the requirements of their specialized activities, and of sufficient size to accommodate an adequate investigative staff, but the Federal authorities found it out of the question to provide such a structure during the period of the war. The present Laboratory building is now approaching a dangerous condition, and has outgrown its quarters. Certain activities are circumscribed, and the cry is for a new building.

A comprehensive review of all published literature on spent liquor from sulphite pulp mills has been compiled, and is now in the hands of the printer. It will appear shortly as Forestry Branch Bulletin, No. 66, entitled, "Waste Sulphite Liquor." This will prove an extremely valuable book of reference to pulp and paper manufacturers, and to all interested in the elimination of waste. An improved method for the estimation of cellulose in wood, worked out at the Laboratories, was published early in the year. This method is being used in a series of complete analyses of Canadian pulp wood species now in progress.

Special analyses are also being made to determine

the resin content of Canadian pulp wood species, and the composition of the resins. These analyses are being made in such a way as to show the relative resin content of the various species when freshly felled, when felled and river driven and stored for a year.

A review of the work completed some time ago at the Laboratories on the technique of beating paper pulp is being prepared for publication. Studies of the fibre dimensions of Canadian woods have been continued during 1918. Data of this kind, besides being of considerable scientific interest, is also of practical value to the pulp and paper industry.

NEWSPRINT PRICE AGAIN EXTENDED.

At Ottawa this week the official price of newsprint paper in Canada was extended by the Paper Controller, Mr. Robert A. Pringle, K.C. The price, therefore, of \$69 per ton will in all probability be the official price in Canada until June 1st.

The Canadian newspapers, it is understood, will be represented at the next session of the inquiry.

The general impression in paper manufacturing circles was that the reports would serve to substantiate the manufacturing costs previously shown at other hearings during the investigation.

At the annual meeting of the Right of Way Mines held at Ottawa last week Mr. Jackson C. Booth was elected president. The annual report of the company was adopted without discussion.

In the House of Commons last week the cost of the Canadian Official Record came under fire. This is the weekly publication of the Department of Public Information. From its first number, October 1st, 1918, to date, it was shown that the cost of this journal had been \$18,747. The information was given to Sir Sam Hughes by Hon. J. W. Rowell.

Mr. Rowell, in his reply, said that he was aware that there had been certain newspaper criticisms, but that such criticisms were small in comparison with the strong endorsement which the Canadian Official Record had received from newspaper and other sources.

The weekly expenditures, according to Mr. Rowell, were \$810 for salaries, and \$140 for material.

POWDERED COAL.

The receipt of Bulletin No. 11 from the Quigley Furnace Specialties Co., New York, reopens the question of pulverized fuel in boiler plants. A number of concerns build equipment for using slack coal, lignite, and peat in powdered form. The rapidity and completeness of combustion of powdered solids is akin to the burning of gaseous or sprayed liquids. Steam power plant engineers in Canada do not seem to have fully grasped the opportunities for using in this way the huge deposits of peat and lignite which should be put to work and so relieve our heavy demand on American mines. Considerable information on the handling of powdered fuel can be obtained from this bulletin.

Pulp and Paper Magazine

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J. NEWELL STEPHENSON, M.S., Editor.

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EDITORIAL

A LITTLE DISPUTE.

In the Atlantic Monthly for March, Arthur D. Little, who is well known as an industrial investigator, and who has done a considerable amount of research work in connection with pulp and paper manufacture, has contributed an article calling attention to some of the glaring wastes of natural resources in the United States, and indicates some of the possibilities for deriving great wealth by their proper utilization. Among the wastes which came in for particular attention we find the lumber industry almost in first place. The statement is made that "enough yellow pine pulpwood is consumed in burners, or left to rot, to make double the total tonnage of paper produced in the United States. Meanwhile, our paper makers memorialize the community on the scarcity of paper stock and pay \$18.00 a cord for pulpwood which they might buy for \$3.00."

Mr. A. L. Dawe, Secretary Canadian Pulp and Paper Association, has sent an open letter to the trade journals calling attention to this statement of Mr. Little's, and rather sharply criticizing the manner in which the statement is made, and mentioning some other points not entirely complimentary to the work that has been done by Mr. Little's organization as an industrial expert. Reference is made to Mr. Little's testimony before the Federal Trade Commission. The letter is printed in full in a recent number of one of our contemporaries, and beside it is a reply from Mr. Little who mildly but firmly maintains his position, and particularly calls attention to the need of wakening the people to a realization of the possibilities that are being wasted by the present methods of handling our natural resources.

It is no new thing to Mr. Little to have cold water thrown on his efforts at conservation, since one of his first positions as an expert was in a paper mill where, after pointing out to the owner that a very large per cent. of stock was being thrown into the river, said owner paid him the balance of his contract, and told Little to clear out, as he did not intend to have anyone tell him how to run his business.

There is considerable need for prophets to continue crying even though it be frequently in the wilderness. Some day they will be heard and then a new era in the conservation and utilization of our enormous resources will begin. In this particular case it seems that Mr. Little left himself somewhat open to criticism from the pulp mill operator's standpoint because

he did not state whether the cost of the pulpwood referred to was wood on the stump or slash left in the woods, or the same material cut and piled in the storage yard. Neither is it stated that in order to make use of this yellow pine for pulp it is necessary to install an expensive plant for the removal and recovery of turpentine and rosin, and that so far the pulp produced seems adapted almost altogether to the coarser grades of wrapping papers and boards.

There are other points brought up in the article referred to that will be given further attention at another time.

THE SWEDES ARE GETTING NERVOUS.

In a recent number of the Canada Lumberman there appears an article from a Swedish source to the effect that some agency is at work endeavoring to discredit Swedish pulp and paper makers in the eyes of the Allies. It is inferred that the agency is German, and that the object is to pave the way for German pulp and paper to the exclusion of the Swedish product. The possibility of such a development is rather at variance with the ideas of British paper makers, who, in conference recently, gave very serious consideration to the possibility of competition between the paper mills of Germany and the Allies for available pulp from Scandinavia. It is anticipated by them that the German mills will for some years be heavy importers and that unless some provision is made, English and French mills may suffer for lack of raw material if Germany is permitted to buy Scandinavian pulp without any restriction, and that such possibilities of supply would put Germany in a position to compete too favorably with English and other allied manufacturers of paper.

A WHALE OF A PAPER MILL.

Some time ago reference was made in this magazine to the movement in Winnipeg for the establishment of a paper mill at that place, to be built and operated by the municipality. A Montreal publication states that the rate payers of Winnipeg may soon have an opportunity of voting on such a mill to cost \$300,000,000. To put it very mildly we would say that this would be "some" mill. Winnipeg is a prosperous and far-sighted community, but if they have any such ideas as this of the paper industry we should certainly advise them to put their eggs in another basket.

SHORT COURSES AT SYRACUSE UNIVERSITY.

For a number of years the Committee on Education for the section of the Canadian Pulp and Paper Association has been advocating the establishment of short courses at one or more of our universities. The idea has been to permit men in the mills who have some natural ability and an ambition to become better acquainted with the principles of pulp and paper manufacture, to attend such classes where they can concentrate on the study of special phases of the industry. A program along these lines seemed almost on the point of succeeding when it was found that the mills were having so much difficulty in operating with insufficient labor and under the stress of heavy demand that men could not be spared for sufficient length of time to take up these courses.

As will be seen on another page the New York State College of Forestry at Syracuse has taken up the idea and with the co-operation of the Vocational Education Committee of the Technical Association, Dean Baker is able to announce that such courses will begin on April 15th. It may not be possible for any of our Canadian mills to send men this year, although it would be greatly to their advantage to do so. One or two mills had selected men for attendance at the Toronto Technical School if enough could have been procured to warrant the establishment of such courses and it may be that the plans of these manufacturers can now be carried out, particularly as there is more labor available than has been true for some time. The announcement gives an idea of the work planned at Syracuse and we have no doubt of the value to the mill men of taking up such studies so as to extend his knowledge of the principles of his industry.

We are heartily in sympathy with the movement and extend our best wishes to our New York friends in their efforts. It was contemplated at one time to arrange for such courses at the University of Maine where the first Pulp and Paper School on this continent was established. That, however, was not found to be feasible under the conditions prevailing at Orono. One of the great difficulties in such a situation is the character and educational qualifications of the men who attend from the mill. We had some slight experience at a summer school session and appreciate the difficulty that the professors at Syracuse will have in giving instruction of interest and value to men who, in the mill, have had so much experience that they find it irksome to study what apparently does not go directly into a digester or heater. But it can and must be done, and the result will fully repay the effort.

It is interesting to note that the heavy exchange rate between Canada and the United States is not an unmitigated evil after all. A Montreal paper recently calculated that the 10,000 odd tons of newsprint exported to the United States weekly brought over

\$11,000 credit to the paper-makers by reason of the 2 per cent. premium on New York funds. Since the industry provides a total of approximately \$200,000 in New York funds daily the advantage to Canadian producers from the exchange rate is calculated at \$1,000 a day. The article goes into further details in regard to some particular mills.

This advantage in exchange will tend to off-set large payments of premiums in other days because of heavy purchases of machinery and equipment from United States manufacturers.

Somebody sent us a clipping from The Pulp and Paper Magazine, entitled, "Don't oil the floor." On it was written, "Better still, use S.K.F. ball bearings. They save oil, requiring oiling only once every four to six months. Save SOME power, too."

Perhaps buyers are observing Lent in going without supplies they would ordinarily purchase.

CENSUS OF THE PULP AND PAPER INDUSTRY.

We have received through the courtesy of the Dominion Statistician of the Forestry Branch, an advanced proof of the comprehensive census of this industry for 1917. This has been prepared by Mr. R. H. Coats with the co-operation of the corresponding departments of the various provinces. It consists of 52 pages in English with a translation of the first thirteen pages into French. The 25 tables are given in both French and English. A resume of the more important figures was issued to the Press of Canada some months ago and was widely published. Some of the more important matter will be given in the Pulp and Paper Magazine in the near future. It is to be regretted that there is so much delay in getting out reports of this kind as the paper mills exerted themselves in the matter and supplied the information as promptly as possible so that by April of last year most of the data, if not all of it, was in the hands of the Bureau. Mr. Coats has worked with great energy on the Census, but Government publications seem to have succumbed to the chronic malady of being away behind. Nevertheless, the Bureau of Statistics has done an excellent piece of work on the Census and we trust that the standard will be kept up and that it will be possible to produce future reports of this kind with greater promptness.

ENCOURAGE CANADIAN CHEMISTS.

There are many chemists finding their life work in pulp and paper, and many more could be absorbed. Norway and Sweden have supplied us with many highly trained men, but there remains no excuse now if we do not develop Canadian trained technologists and research chemists for our paper industries in larger numbers than ever before. With such an assured market in the United States and foreign countries it becomes a public duty to foster scientific research in this industry, to the end that Canadian brains may place on a truly economic basis, the utilization of one of our greatest sources of national wealth.—Canadian Chemical Journal.

The Pulp and Paper Industry and Its Place In The Period Of Readjustment

This paper was read by J. N. Stephenson at the annual meeting of the Technical Section of the Canadian Pulp and Paper Association on the occasion of the visit to the Montreal Technical School, Jan. 31, 1919:

There is no doubt but that the world, and particularly the industrial world, is on the verge of a social renaissance. The lamentable unrest in many quarters is but a phase of a general development. Unrest is commendable in so far as it is striving for better things, clearly seen. The regret comes when unrest is caused, as it usually is, by more or less deplorable conditions, and when it involves or contemplates injury to, or destruction of, any portion of the community that is not in the eruption.

But happily there are more peaceful signs of efforts that are acting powerfully toward improving the lot of those at present among the less fortunate of us. We cannot look on men as being divided into classes, as has been done for too long. Yet the statement that all men are born free and equal is largely untrue because it does not take into consideration two important factors in life—circumstance and opportunity.

Biology has a law which is briefly expressed in the phrase "the survival of the fittest." Industry exchanges this to "the arrival of the efficient." The present trouble with industry is no doubt largely due to the fact that in arriving, succeeding, climbing to the top, or whatever you choose to call it, too little thought has been given to those who fall out of the race, or who never even started. Thoughtful persons do not hesitate nor fail to recognize the effect of environment on the development of both mind and body, and character is even more susceptible to the influence of circumstance. In many cases the effect is a strengthening of moral fibre, but too often the tendency is in the opposite direction. Recognition of this factor is the basis of town planning and modern housing schemes.

But other things are needed for growth than providing a good place to plant. There must be opportunity and encouragement for development and expression of character. Education is the most important factor in this regard.

The Pulp and Paper Industry is one of the most active agents in Canada in both these matters. There is no doubt but that the majority of the managers of our mills are progressive, broad minded and big hearted men, but there are some who apparently do not yet appreciate the human element in industry. This, in general, may also be said of the workmen. Both employers and employees, especially the leaders of both, realize the need of elevating and maintaining at a high standard all conditions of living and laboring. This means that attention must be paid to the conditions under which work is done in the plant and the circumstances that will affect and maintain the tone of the community. The progressive executive may plan work along these lines, and the men will certainly desire it, but the accomplishment of plan and desire is largely in the hands of men who have themselves been blessed with educational opportunities.

The problem is largely an engineering and technical one, but also involves economic and social factors. In fact, it would be difficult to say which predominates. It seems to me that all three are so closely connected that our fundamental education should include such training as would enable everybody to appreciate in some degree their significance. A knowledge and understanding of fundamental principles is necessary for the successful solution of any problem and the broader the foundation, the better the chance of success. This is stated notwithstanding the fact that some problems are solved by a happy blunder, usually after an enormous waste of effort. For this reason I believe that our courses of study, if they are to fit the coming generation to take their places as efficient, dependable citizens, must pay more attention to the development of characters that will recognize, accept and discharge their social obligations. This includes business, political and community relationships.

The aim of our educational system is wrong if it is simply to make better cooks, back-tenders, firemen or bookkeepers. A school is a public institution and can best serve the public by developing a more uniformly high standard of citizenship at the same time that it develops individuals who are more capable of producing commodities essential or desirable for the comfort and well-being of everybody. Our efforts are not limited to ourselves and our neighbors, but comparatively few are aware of the channels by which the things we do and make are felt outside a very limited circle.

Opportunity for Technical Men.

Because this period, commonly called the period of reconstruction, is so largely concerned with the social aspects of life is no excuse for evasion of responsibility by the technical man on the ground that he is an engineer, chemist or any other kind of scientist. It rather emphasizes the need of his doing a lot of thinking about how he can contribute to its solution. There is no doubt in my mind that the technical man must be largely instrumental in so training the man in the mill that he may be in a position, if he has initiative, to grasp opportunities to advance himself. This means that each man should have a chance by study, and by education to entitle him to greater reward. There is no question that compensation is most equitably based on quality and quantity of production, i.e., on service. The technical man, more than anybody else, is able to guide and stimulate progress in this regard, by improvements in processes and machinery and assistance in educational work. It is not enough to give a man a job, he must be in a position and a condition to grow. Some jobs are but little better than graves, where initiative is smothered. And placing some men is like planting dead sticks—they lack the vitalizing spark of initiative. The latter difficulty can be largely overcome by giving everybody a better intellectual start and taking more pains to consider temperament and fitness in employing men.

The condition under which men live and work is a problem for engineers, and involves town planning, house design and building, and sanitary and safety

provisions. This matter is of particular importance to the pulp and paper industry, since most of the mills are located in small towns, and are often the only industry in the place. Many of these towns are model communities, and the industry can well be proud of them. The almost total absence of serious labor trouble in pulp and paper mills in the last four years shows that living and working conditions must compare favorably with those met in other industries. But our aim must be toward improvement. This industry is a real leader in the economic life of the Dominion, and must always set a good example. To do so means that it must attract and hold the best type of men, both for management and operation.

That sentence suggests a thought as to whether there is not too great a gulf between the management and operation; whether the responsibility of management is not in most instances so concentrated as to savor of autocracy. The idea of extending the burden of management may be likened to the extension of the franchise in political matters. The principle of democracy in state and municipal affairs is being applied daily with more and more force. That residence in a country and community and contribution to its welfare entitle intelligent men and women to a voice in the government, is the basis of democratic politics. The right to and demand for this opportunity has been the torch that has started more than one revolution. A man is bound to have more respect for and interest in the community which he helps to govern through the effect of his vote. Why should intelligent men not have a voice in the administration of the affairs, at least the internal affairs, of the industry in which their lives and labors are invested? Men are not so enthusiastic as they used to be about being "managed." They do not like as a class to be dictated to. It is true they usually have a choice of dictators, but that does not dispell their idea that business management is autocratic and autocracy is not popular, and will become less so.

The problem is to see that workers are better fitted to exercise such a business franchise, to provide an education that will give them both broader and deeper views of affairs and enable them properly to appreciate and discharge the added obligations.

I believe this is the readjustment that will take our serious thought and best efforts. The problem is more difficult because it is largely a new one. Extension of trade is a matter in which business men have had experience, and for which there are fairly well defined methods. The absorption of returned soldiers and getting munition workers back into occupations of peace are also big problems, but are not so fundamental to the continued welfare and even stability of nations as the problem I have endeavored to outline. These others have been recognized, and the solution of them pretty well assured. They are problems rather of re-establishment than of readjustment.

The technical man is vitally interested in this whole affair, largely because he is a sort of connecting link between management and men, because he is responsible for much of the work in safety and sanitation, and the control of processes and particularly because he is expected to be a leader in matters of education. He must therefore be more than a technical man, because if only the technical side of education is developed we shall drift toward the German idea of material efficiency. The opportunity for the technical

man in way of service and guidance is great, and the responsibility is great.

The pulp and paper industry is Canada's biggest permanent manufacturing industry. It contributes in many ways to the people of Canada, by developing resources, employing labor, making products that are absolutely essential to the daily life of each one of us, and helping to provide a national income with which to pay for the things we must bring in from our neighbors. The forests and water powers the Almighty has so abundantly placed in what is now the Dominion contribute far more to our welfare because used by this industry. The proper use of them demands greater care and thought than they have been given in the past. The industry can supply more materials than at present is done. The development of new kinds of paper and new uses for paper goes on almost daily. A greater number of educated men and of better educated men is much to be desired. No industry has more attractive possibilities than this for the man who really wants to do something. Figures are tiresome, and this talk probably is also, but I would just remind you that there is a string of mills from the Atlantic to the Pacific that want real men. I have worked in paper mills and know how interesting the work is, and technical men are daily making it more so. There is a chance for real expression in it, and satisfaction in doing something worth while. I would say, in closing, "Get in and get under," then lift with your whole strength.

SAFETY IN THE HOME.

Mrs. Nettie—stuck a pin in her finger while dressing. Blood poison resulted. She died sixteen days after injury.

Five cents' worth of iodine would have saved this woman's life! Every man in this plant knows this—but does your mother, your wife, your daughter and your little son?

Falling down stairs is one of the most common accidents in homes. Stairs are frequently dark, handrails are either not provided or are not used; sometimes stairs are so steep as to be dangerous, but the chief trouble is due to slipping on some object, such as a piece of runner, a toy and occasionally a cat.

The average home contains a very considerable equipment of tools and knives and other devices which have sharp edges, and which can cut older people as well as children. Tools should be hung up or placed in racks, and particularly should one avoid having a mixture of sharp knives and other devices in drawers of tables.—(Mead Co-operation.)

NEWSPRINT FOREIGN TRADE GREATER IN U.S.

The 1918 imports of newsprint were 36,970 tons greater than for 1917. Exports for 1918 were 2,762 tons greater than for 1917. Here is the table:

	Net tons 1918	Net tons 1917
Imports of newsprint (total)	596,082	559,112
From Canada	581,013	533,080
From Newfoundland	14,836	24,781
From elsewhere	233	1,251
Exports of newsprint (total)	96,652	93,890
To Argentina	18,187	25,205
To Cuba	8,186	9,001
To Chile	4,722	6,556
To other countries	65,557	53,128

Pulp and Paper Courses at Syracuse University.

Many readers of this magazine will be interested in the Short Courses in Paper and Pulp Making, Dry Kiln Engineering and Timber Grading to be given at the New York State College of Forestry at Syracuse University, April 15 to June 1. Dean Hugh P. Baker describes them substantially as follows:

Courses in Paper and Pulp Making.

For many years the Technical High Schools of Europe have been training men as experts in the manufacture of pulp and paper. With the rapid development of the paper and pulp industry in America, a large number of these men have come to America to assist as technical men in the development of the industry.

Because of the opportunities ahead of the industry in the period of reconstruction following the war, it seems to be an unusually opportune time to train young men in America for American economic and industrial development. There has been a distinct and a growing demand for men trained thoroughly in the manufacture of paper and pulp and in the production of raw supplies used in this important industry. With this demand for the trained expert, there has come a demand for the training of the worker in the mill, and it is to supply this last demand that the College of Forestry at Syracuse is holding this year for the first time, a short course in paper and pulp making.

Description of Work to Be Given in the Short Course.

It is felt that the young man beginning work in a paper mill should have a certain amount of work in the structure of timber, in elementary chemistry, in mechanical drawing and in business English and the writing of reports. Work along these lines to be offered in the Short Course will be of the simplest character, and will be given largely as demonstrations and laboratory work rather than as lectures. However, the Departments of Forest Chemistry, Wood Technology and Forest Utilization of the College will give a series of lectures in connection with laboratory work and demonstrations that will be a foundation upon which there may be developed a better understanding of paper and pulp making.

The short course in Paper and Pulp Making will consist of lectures, laboratory work and field demonstrations in Elementary Chemistry, Mill Engineering Practice, Preparation of Wood and Manufacture of Various Forms of Pulp and the Manufacture of Paper.

The excellently equipped laboratories and the Forest Library of the College will be open to short course students and every effort will be put forth to make the short course practical and worth while to the men who attend. The regular teaching force of the College will carry the work in Chemistry, Wood Structure, Drawing, and certain phases of Paper Making, and experts will be brought in from the outside to handle the various phases of the paper making work. Besides the regular work in the various courses offered, there will be a series of evening lectures by some of the best known Foresters, Paper and Pulp Manufacturers and Chemists in the country.

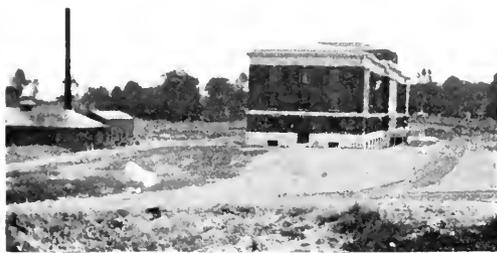
Any man who has had an eighth grade schooling

will be accepted for a period of from two to six weeks. The work will be adapted to men from the mills rather than for college men, and every effort will be made to put the work in such form that it may be taken advantage of in an effective way by those who attend.

The schedule as now worked out calls for lectures, demonstrations and laboratory work in the forenoon of the week, with the exception of Saturday. The period immediately following luncheon, that is from one to two p.m., will be given up to round table discussions of the work of the morning and of the practical work to be taken up in laboratory and field in the afternoon. From two until four or five the time will be spent in the drawing room, in elementary work in mechanical drawing and curve plotting, in the chemical laboratory, in the laboratory of wood technology and in the paper and pulp laboratory. Visits will be made each week to paper mills in the vicinity of Syracuse, which is in the centre of a district of some 20 miles in extent in which there are 18 separate paper and pulp mills. The College is easily accessible to the Oswego and Black River districts and the great pulp producing region of the Adirondaeks is within a few hours of Syracuse.

Laboratory Facilities for the Teaching of Paper and Pulp Work.

The State of New York has erected for the use of the State College of Forestry a forestry building which is probably the best equipped building of its kind in the United States. In the basement of this



Home of the New York State College of Forestry at Syracuse University. The building behind the power house contains some wood working machinery and the experimental dry kiln.—(Photo, J. N. S.)

building there are over 14,000 square feet devoted to laboratories of various kinds. The paper and pulp laboratory and the forest chemistry laboratory are well equipped not only with necessary chemical apparatus and reference libraries, but with machinery which is classed as semi-commercial. This large sized equipment comprises practically all of the pieces of machinery usually found in a commercial plant, such as small experimental beaters, wet machines, digesters, stuff chests and other apparatus of this general

character. This equipment is of two special types of design—first, special hand frames, baby beaters and such equipment as may be used for classroom demonstration and for student experimental work. Second, the semi-commercial equipment which represents the type of apparatus found in all paper and pulp plants.

Facilities are offered for such physical tests as lustrating, stretching, crumpling, and such other tests as are applied to commercial papers. Laboratory bleaching devices have been installed for regular classroom demonstration, and a 34-pound experimental beater is used for quick tests on small lots. Hand molds and dandy roll sections are used to teach the principles of water marking, felting properties of various pulps, etc.

Short Course in Dry Kiln Engineering and Timber Grading.

With the construction of dry kilns in many of our plants, there has developed a great need for men who understand the principles of dry kiln engineering and who can not only handle the dry kilns mechanically but who have some conception of the problems involved in the extended use of dry kilns and of timber prepared for final use by dry kilns.

The New York State College of Forestry construct-



Case in rotunda of N. Y. State College of Forestry Building, a fine collection of birds, animals, and insects, showing the wild life of the forest.

ed during the past summer, in connection with the College of Forestry Building, a complete commercial dry kiln where both research and instruction is being carried on with the various woods used in the industries in New York. Constant inquiries coming from all parts of the state as to the dry kilning of timber and requests for information as to literature upon the subject has led the College to believe that a real need may be met by offering the short courses in dry kiln engineering. Therefore, the courses have been outlined which will begin April 15 and continue until June 1. As in the case of the short course in paper and pulp industry, fundamental work in structure of timber and in timber grading will be given by the Department of Wood Technology and Forest Utilization in the College. The work will be of an elementary character, and will be given largely through work in laboratories and as field demonstrations.

To supplement the work as given by organized de-

partments of the College, technical men will be brought from the outside to give a series of talks and demonstrations on dry kiln construction and practice.

It is difficult to describe just what timber grading has meant in this country during the past 25 years because it has meant so many different things in different places. Efforts have been made by Lumbermen's Associations to standardize grading and excellent progress has been made. However, there is plainly a need for better knowledge of just what is meant by timber grading, the principles involved in grading, and with this a better knowledge of timber itself.

Among very many other things the war demonstrated the fact that such knowledge as we have of timber grading is confined to comparatively few men. Young men were put into the work of grading spruce and other woods used especially in airplane construction who had no knowledge of wood and less of grading.

The New York State College of Forestry, which has been working for several years on problems of forest utilization in the state, believes that there are a number of young men in the state who would like to know more about timber grading. It is therefore offering a short course continuing for six weeks from April 15 in timber grading. As in the case of the short courses in paper and pulp and dry kiln engineering, a certain amount of preliminary work will be given in the structure of wood, in defects common in woods, etc. With this will be given a certain amount of work in Forest Utilization and a few lectures will be given in Logging and Lumber Engineering. There will then be given a great deal of work in grading of lumber as found in wholesale and retail yards in and about Syracuse. Syracuse has some very excellent lumber yards, and these yards are glad to offer opportunities for such instructional work as the College will give in this short course.

It is felt that a young man coming in from retail or wholesale lumber yards or from the woods can gain very much from such work as will be offered in these courses.

Special Lectures by Well Known Men in Forestry, Paper and Pulp Manufacture, Forestry Chemistry, Etc.

In connection with the short courses already outlined, and outside of these courses, there will be offered a series of lectures by well known men who have played important parts in the development of forestry, in paper and pulp manufacture and in forest chemistry. These addresses will usually be illustrated, and there will be from one to three each week. In this way, those who attend the short course will have opportunity of becoming acquainted with leaders in their particular kind of work.

Expenses of the Short Course.

The only expenses connected with any of the Short Courses outlined above will be a registration fee of \$5.00. Other expenses will be incident to the trip to Syracuse, and living in the city during the period of the Short Course. Room and board may be secured in the city near the University at from \$6 to \$8 per week. It is not probable that rooms in the University Dormitory will be open to any of the Short Course men. Inquiries regarding rooms will be answered and suggestions made as to where rooms and board may be secured.

Soda Pulp Manufacture

By E. SUTERMEISTER,
S. D. Warren Co., Westbrook, Me.

(Continued from Page 330.)

PART VII.

In Part I, Mr. Sutermeister discussed the preparation and composition of cooking liquor and the apparatus and materials employed, with illustrations; in Part II, the recovery of lime, with analyses; the principles and practices of cooking operations, with curves; in Part III, mill practices with data relating to woods employed; modified processes; and by-products of cooking; in Part IV., digesters, with diagrams; circulation and steam consumption; comparison of rotary and stationary digesters; in Part V, discharging or blowing digesters; washing the pulp, with analyses of black liquor and illustrations of apparatus; in Part VI, recovery of soda; evaporating systems, with illustrations.

Black Ash Furnace.

The furnace itself consists essentially of an iron shell lined in such a way that the interior is somewhat conical with the big end toward the fire box or discharge end. Modern furnaces are 20 ft. long and 9 ft. outside diameter, and the lining is about 15 inches thick at one end and 9 inches at the other. The material used in lining the furnace is ordinary hard burned red brick. To help in resisting the wear on the lining it has proved advantageous to place at frequent intervals between the bricks pieces of cast iron; the links from old chain grates, mounted with their edges flush with the bricks have been found excellent for this purpose. The furnace is encircled with two heavy rails or bands, and is supported on two pairs of wheels slightly wider than the rails and upon which the latter rest. In the space between the rails is a heavy gear which is mounted on blocks fastened to the shell of the furnace. This leaves a space for air cooling between the shell and the gear, and makes the latter less liable to break because of expansion and contraction. The furnace is made to turn by means of a small steam engine, the power being transmitted through a set of reducing gears to that fastened to the furnace. The speed of turning is from one to three revolutions per minute, according to the condition of the liquor supply, the heavier the liquor the faster must the furnace be turned in order to carry it up sufficiently far on the sides. Mounted directly under the shell is a pair of heavy beveled wheels, one on each side of one of the rails; these are placed so close to the rail that a slight endwise motion of the furnace brings the side of the rail in contact with one or the other of the wheels, and further sliding of the furnace is prevented.

At the discharge end of the furnace is a firebox or traverse furnace, mounted on wheels, which rest upon rails, so that the whole can be easily drawn back from the furnace when repairs to its lining are necessary. This fire box is usually arranged to burn coal and refuse wood or it may be constructed to burn oil or gas where either of these is available. The amount of fuel which it is necessary to burn in the firebox depends on the strength of the liquor entering the fur-

nace, but in any case it is comparatively small. It is usually impossible to get accurate data as the amount of refuse wood consumed is not measured in any way. In one mill where both wood and coal were burned, the amount of the latter only was 120 lbs. per ton of black ash produced.

The liquor from the storage tank enters the back end of the furnace proper in a steady stream, and gradually works its way forward, being heated more and more intensely until it is finally discharged at the other end onto a conveyor or into iron cars. During its passage through the furnace the last of the water is expelled and the organic compounds are decomposed, so that the discharged ash contains practically nothing but sodium carbonate and carbon. If the ash is well burned it is discharged in a glowing condition, and shows no flame or smoke, or at most a slight bluish flame; if the furnace is pushed a little too hard the ash may be incompletely burned, in which case it will show considerable yellow flame and may continue to burn even after it is dumped into the leaching tanks. The amount of ash which can be burned in a 20-ft. furnace in 24 hours by experienced men is about 30-33 tons, under exceptionally favorable conditions it may go as high as 42-43 tons. The lining of such a furnace will last about six months under ordinary conditions, but if production is pushed to the limit it will need repairs in rather less time.

The composition of the cooking liquor has some influence on the way the black ash burns. If salt is present due to the use of electrolytic caustic soda, it is found that the best results are obtained when it amounts to about 5-7% of the total inorganic constituents; if it is much less than this the ash becomes sticky in the furnace and the difficulties of burning are increased. If the salt content rises to 15% of the total inorganic material the furnace charge becomes too fluid and the burning is unsatisfactory.

It is the practically universal custom to install with each black ash furnace a boiler through which all products of combustion, whether from the furnace or the fire box, must pass on their way to the chimney. Much heat is saved in this way, and a considerable amount of steam is raised for use in the evaporators. It has been shown that a furnace burning 21 tons of black ash per day will, if in good condition, develop 150-160 horse power. By the use of an economizer a still further saving in heat can be made provided a use can be found for the hot water.

Figure 25 shows diagrammatically the arrangement of a modern black ash furnace with its accompanying fire box, or traverse furnace, and the boiler setting for the recovery of waste heat.

Losses in Recovery.

The losses in the burning of the black ash are very difficult to determine since the process is a continuous one, and reliable measurements of the materials going to and coming from the furnaces are very seldom made. The loss is, however, an appreciable one, as more or less finely divided black ash is carried

into the flues by the draft and possibly a small amount of soda is also actually volatilized by the intense local heat. It has been estimated by some authorities that as much as 8% of the alkali may be lost up the flues. This material makes it difficult to keep the boiler tubes clean, and it also collects in the main flues, where it becomes fused or sintered together by the heat into such large masses that the draft is considerably reduced. This fused material on solidifying is so hard and dense that it is necessary to use sledges and bars to break it out. It is not by any means all sodium carbonate as the following analyses of two different samples prove.

Color	Solubility in water	Percent sodium carbonate
Cream white tinged with yellow and green	All soluble	26.1
Light to dark brown	Largely insoluble	9.5

In some plants the loss up the flue is prevented, or reduced to a minimum, by installing a stack about 8 feet in diameter by 50 feet high, through which all the smoke and gases have to pass. This stack contains baffle plates at intervals, and weak black liquor is sprayed into the top by means of a bell sprayer. This liquor passing downward over the baffle plates dissolves the solid matter out of the smoke, and is evaporated by the waste heat. It is caught in a tank at the foot of the stack, and is pumped through the tower again and again until it reaches the desired strength when it is filter-pressed to remove solid matter which might prove troublesome in the subsequent operations, and then goes to the evaporators. Such a stack necessitates the use of a fan to maintain the draft which would otherwise be destroyed by the descending spray.

The recovered ash from the furnace, when well burned, will contain from 65 to 80% of sodium carbonate, together with small amounts of impurities, including iron, alumina, lime, silica and sulphur derived from the wood and from the fuel used in the fire box. When of good quality it will give a solution which is practically colorless, but if underburned the solution will be brownish, the depth of color depending on the amount of undecomposed organic matter present. Such coloring matter does comparatively little harm unless present in excessive amount, when the organic material thrown down by the lime in recausticizing may cause the lime mud to settle poorly. It indicates, however, that part of the soda is not being recovered in such form that it will give its maximum service, and for this reason brown leach liquors are to be avoided.

Leaching Systems.

The black ash goes from the furnace by conveyors or cars to the leaching tanks, of which two general types are in use. One type consists of simple open tanks with false bottoms covered with a layer of sand into which the black ash is dumped. As the ash is frequently flaming and nearly always glowing when put into the leach tanks, the addition of water from above causes the generation of much steam and leads to explosions, which blow the ash from the tanks. For this reason the first flooding is done from below, the water entering below the false bottom and gradually working up through the ash until it is

thoroughly saturated. This solution is then drawn off and the ash washed a number of times with weak liquor or water run onto the top of the charge. The solution first obtained and the first washing, or in some cases the first two washings, are mixed and sent to the causticizing room as leach liquor. The final washings, which are four or five in number, are collected and used upon a tank from which the first leachings have just been taken. In order to obtain the best results from this system of washing it should be done systematically, the first washing being made with the strongest liquor, and this being followed by continually weaker and weaker solutions, until the final wash is with water. Unfortunately the equipment in many mills is not arranged so that the various wash liquors can be kept separate and the result is a considerable loss of soda.

The washing is best done with warm liquor or water, the maximum solubility of sodium carbonate being between 33 and 70 C.; above the latter temperature its solubility diminishes slightly. Apart from its lower solubility in cold water there is a much greater tendency for the formation of hard lumps, which are not easily penetrated, and from which the soda is leached out with much difficulty. Such lumps, and even masses of considerable size, are apt to form in very cold weather, and particularly in tanks exposed to cold drafts or in those located close to the outer walls of buildings. The loss of soda from this cause may be considerable, while the reduction in the speed of leaching may cause serious annoyance through inability to keep up with the rest of the mill.

The other type of leaching equipment consists of tanks which can be closed tightly so that pressure can be maintained. These tanks vary from 200 to 300 cubic feet in capacity, and for efficient operation four or five should be connected in series during the washing. Each tank, or shell, is provided with a cock at the bottom, through which the liquor can be turned into the line leading to the causticizing room and two cocks at the top, one for hot water and one for circulating the liquor from shell to shell. The ash is brought to the leachers in cars or by a drag chain in an enclosed chute. In the shells it rests on false bottoms through which the liquor, but not the waste, can pass, and which are supplied with central openings through which the waste can be sluiced after leaching is completed. In operating this system hot water is pumped under a pressure of about 80 lbs. onto the top of a charge which is most nearly washed; it passes through the ash, through the false bottom, and is forced into the top of the next shell and so on through the system. The liquor from the bottom of the strongest shell passes directly to the alkali room. In any system operating in this way one shell is cut out for discharging and filling, while the others are being leached.

The ash, when put into a leacher is very hot, and when brought into contact with water generates considerable steam and gas. To avoid danger of blowing up the leachers it is customary to wet down the ash before closing the shell, and to do this without blowing the ash from the shell requires considerable experience on the part of the leacherman. The chief advantages of this system are a saving in floor space required, and in the time of leaching as a shell can be leached in 20 to 25 minutes.

Judging from results obtained in actual practice there is very little to choose between the two systems,

and it appears that just as good and efficient work can be done with one as the other.

Black Ash Waste.

The black ash waste after leaching out the alkali always contains a small amount of soda, which cannot profitably be recovered. The amount of such loss depends on the care used in leaching, the temperature of the water employed, etc.; it may vary from a few tenths of one per cent (based on the dry waste) for good work, up to four or five per cent for unsatisfactory conditions. This would correspond, in the case of the greater loss, to about 1.25 to 2.75% of the total alkali present in well burned ash. While the determination of the amount of this loss appears to be an easy matter it is frequently the case that the leach tanks are so arranged that it is almost impossible to get a fair sample of the waste. If the tanks are so placed that they discharge directly into the sewer some form of sampling tube should be used which will permit of obtaining a continuous sample from the top to the bottom of the tank. If the discharge orifice is accessible a sample should be taken during the entire time of discharge.

The black ash waste is a very light, bulky carbon which is of such a consistency that it retains mechanically a large amount of water. When allowed to drain as much as possible in the leach tanks the top portion still contains about 80-85% of water, while if treated in a centrifugal machine this may be

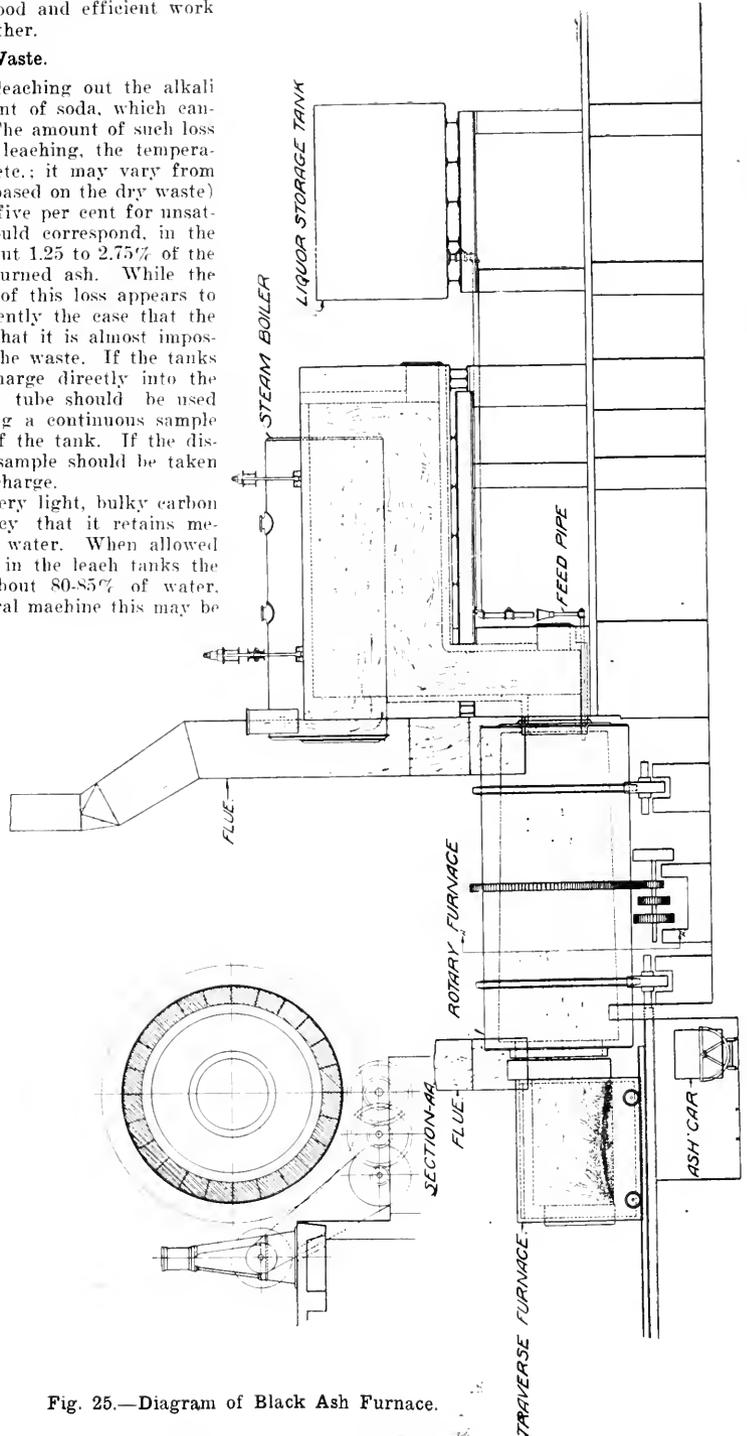


Fig. 25.—Diagram of Black Ash Furnace.

reduced to about 68-70%, beyond this point it is necessary to apply heat in order to reduce the amount of moisture. Analysis of a sample of waste which had been oven dried and then exposed to the air gave the following results:

Moisture	6.06%
Sodium carbonate, Na ₂ CO ₃	2.51 "
Calcium carbonate, CaCO ₃	1.17 "
Sodium sulphide, Na ₂ S . . . . .	.37 "
Magnesia, MgO . . . . .	.34 "
Iron & alumina, Fe ₂ O ₃ & Al ₂ O ₃ . . . . .	.26 "
Silica . . . . .	.17 "
Calcium sulphate . . . . .	.07 "
Carbon by difference	89.05 "

Numerous attempts have been made to utilize this waste material for various purposes, but no use has yet developed which will take more than a small part of the total amount made. It has been tried and found unsatisfactory in making gunpowder, printing ink and dry batteries. A small amount is used in preparing decolorizing carbon, but the most promising outlook appears to be its use as a fuel. This has been tried many times with only partial success because of mechanical difficulties, and because of its high moisture content. If handled in the wet state it may be burned mixed with slack coal, if the proportion used is not too high and provided a thorough mixture is made, while if dried it should be possible to burn it in any boiler setting which is adapted to pulverized coal. It might also be made into briquettes by using a binder of pitch or other material. Its use as a fuel is certainly indicated by its high heating value, 14370 B.T.U. per pound of air dry waste, as determined by calorimetric methods.

(To be Concluded.)

THE PRICE OF PAPER.

In the University Magazine, Montreal, for February, Mr. Archibald MacMechan presents an open letter to the journalists of Canada in which he criticizes rather severely the various sins of which the newspapers are guilty, and which are largely responsible for the high price of paper. The worst of these he claims is the curious, childish, universal rage for bigness, bragging of the number of columns they contain. He pictures a New York club on Sunday morning with men in arm chairs buried under an avalanche of paper.

Mr. MacMechan suggests a few remedies. He says there is no reason why papers should be so big while there are many reasons why they should be smaller, to the advantage of the owners, the journalists, and the general public. With a smaller journal the public would get better material in briefer form. This critic would begin with the padding; he would cut out the boiler-plate cartoons from the United States joke factories; he would cut out the "beauty hints," adding that Canadians are beautiful enough as it is; he would cut out the joke column and the talks, travelogs, etc., also pictures of actresses and murderers. He would also do away with scare-heads and other useless headline space, adding that the vice of headlines is that they tell you everything and that either the heading or the article should be eliminated.

In support of his arguments he mentions a number of successful and highly esteemed newspapers which have made their mark because they have been small and maintained an excellence in the inverse ratio to their size.

PULP AND PAPER EXPORTS IN JANUARY.

Related trade returns, issued by the Department of Trade and Commerce, give the value of the January exports of paper, pulp and pulpwood, from Canada, as \$8,100,332, a gain of \$3,147,935 over January, 1918, made up as follows:—

Month of January.	1918.	1919.
Paper and mfrs. of	\$2,859,425	\$4,582,687
Pulp, chem. pulp	1,328,823	2,193,194
Pulp, mech. ground	289,496	362,322
Pulpwood	484,653	972,129
Total	\$4,962,397	\$8,110,332

Increase \$3,147,935

For the first ten months of the current fiscal year the total exports amounted in value to \$80,834,760, a gain of \$21,363,227 over the corresponding period of 1917-18, and of \$38,305,015 over that of 1916-17. Figures for the ten months follow:—

Ten months.	1916-17.	1917-18.	1918-19.
Paper & mfrs. of \$20,051,794	\$30,424,405	\$37,963,319	
Pulp, chem. prep. 11,262,806	15,963,707	26,268,144	
Pulp, mech.			
ground	5,440,942	5,664,149	4,035,940
Pulpwood	5,774,103	7,419,272	21,567,357
	\$42,529,745	\$59,471,533	\$80,834,760

The heavy increase in the value of the unmanufactured pulpwood is due both to higher prices and to an increase in the quantity exported. The figures show that, despite the embargo on the export of wood cut on Crown lands, Canada is still allowing a large amount of raw material to leave the country, which, if manufactured here, would add several million dollars a month to our credit on international trade account. (During the calendar year 1918, the amount of pulpwood exported was 1,350,000 cords.)

LABOR LEADERS VISIT ABITIBI.

On Sunday afternoon, March 11th, Mr. Jerry T. Carey, President of the International Brotherhood of Paper Makers, and Mr. John P. Burke, President of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, arrived in Iroquois Falls and were enthusiastically welcomed by the members of both local Unions.

A joint meeting of the two Local Unions, as well as separate meetings of each were held.

On Monday Mr. Carey, Mr. Burke and a joint committee from both Local Unions held a conference with officials of the Abitibi Power & Paper Co., chiefly for the purpose of having a friendly discussion on various points in connection with the decision of the War Board. Mr. McInnis, the General Manager, presided at the meeting.

WOOD PULP MAY GO TO MEXICO.

The Canadian Trade Commission announced a new ruling under which it will be possible to resume exportation of wood pulp to Mexico. Owing to conditions arising out of the war both Canada and the United States were obliged to exercise extreme caution as to permitting the exportation of any paper-making material. The relaxation is being made simultaneously in both countries.

ENGLAND WANTS CANADIAN PULP.

Apropos of the announcement that British restrictions controlling imports of paper will be lifted on the 30th April next, and that this market will then be open to the world, the following will be of interest to the industry on this side of the ocean.

The annual demand for newsprint in Great Britain is about 500,000 tons. The paper mills in Great Britain are understood to have sufficient capacity to supply 400,000 to 450,000 tons, the balance must be imported.

The annual demand of this market for pulp—including both sulphite and groundwood—is approximately 1,200,000 tons. A British expert considers it quite reasonable to expect that Canada should supply at least half of this amount.

He considers, therefore, that Canada has an unprecedented opportunity to secure the bulk of the pulp business in this country, and also to supply newsprint and other manufactured papers. The paper manufacturers of Great Britain are to-day organized as they never were before, and he expressed personally the opinion that the Canadian manufacturers will be acting in their best interests if they concentrate their efforts in the immediate future chiefly upon the sale of pulp.

Members of the Canadian Pulp & Paper Association have been asked to make a definite statement at once covering the possibilities of export of both pulp and paper from Canada to England during the ensuing twelve months—what quantities of both chemical and groundwood pulp are available, what quantity of newsprint, and a list of other classes of paper, cardboard, etc., which Canada is now producing in exportable quantities.

But quite another view of the situation may be derived from February figures on imports to England. The large tonnage from Newfoundland is but little more than two-thirds of the rated capacity of the mill at Grand Falls, which is over 60,000 tons per year, or about the figure given in the above communication for the whole newsprint requirements from outside Great Britain. The total imports of this paper in February were some 5,000 tons, or at the rate of about 60,000 tons per annum. No Canadian newsprint is mentioned, but the small American shipment may have been partly Canadian paper. There seem to be two ways of selling our paper to England—either displace the Scandinavian article and supply any increase in demand, or sell to British agents with foreign connections. The immediate chance seems to be for pulp exports, but we believe paper can be sold in England through a vigorous and continuous selling campaign. In this connection, reference should be made to page 339, in the last issue of this magazine.

The World's Paper Trade Review notes the arrival in February of 67,120 cwts. of reel paper from Newfoundland, which comprised over 69% of our total imports of this class of paper (96,166 cwts.). A small quantity also came to hand from the United States, viz., 1,296 cwts., whilst reel paper received from Norway amounted to 22,650 cwts., and from Sweden 5,100 cwts. Printings and writings not on reels were a poor import, viz., 18,051 cwts., Norway being responsible for 14,190 cwts., Sweden for 2,063 cwts., and the United States for 1,660 cwts. Belgium supplied 680 cwts. out of 959 cwts. of printed or coated paper. Norway and Sweden hold a monopoly in the British mar-

ket in regard to the supply of packings and wrappings, the former country shipping 33,792 cwts., and the latter 21,270 cwts. out of a total importation of 58,572 cwts. Imports of strawboard amounted to 45,134 cwts., and mill and wood pulp board to 22,789 cwts. The total imports last month were 244,978 cwts. of the c.i.f. value of £596,816, an increase in quantity of 4.2 per cent, and in value of 17.3 per cent, compared with February of last year.

Papermaking Materials.

Ninety-seven per cent of the imports of papermaking materials into the United Kingdom last month represented wood pulp. The total receipts were 46,846 tons, valued at £902,745. Compared with February of last year, the quantity shows an increase of 30 per cent, and the value a decrease of 7 per cent. A feature of the imports (as compared with the corresponding month of last year) was the increased receipts of mechanical wood pulp, viz., 12,185 tons. Chemical wood pulp shows an addition of 1,314 tons. Esparto, however, was down 2,538 tons.

ENGLAND AND CUBA IN MONTREAL.

Mr. A. Dykes Spieer, representing James Spieer & Co., Limited, of London, England, called on the Canadian Pulp & Paper Association last week. Mr. Spieer is here in Canada looking for supplies of paper, and in course of conversation he brought out a sample of the new waterproof paper treated in a secret process which was used extensively in the war operations.

It has been used for trench waders and also for Sou' Wester hats, even for vests and capes, and is the best imitation of the well-known Japanese mulberry paper that Mr. Dawe has yet seen.

Some idea of the tremendous size of some of these war ventures may be gauged by a statement made by Mr. Spieer that he employed 30,000 people working on gas masks, which was part of their war work.

Another caller was Mr. J. Nelson Polhamus, representing Cuban interests and looking for supplies of newsprint. Mr. Polhamus, who wears the red ribbon of the Legion of Honour, was connected with the diplomatic service of Cuba, and represented his country in various parts of the world.

PROFITS IN PAPER STOCKS.

The investor in the shares of Canadian pulp and paper companies has, with but few exceptions, had no cause to complain over the results of the year's business. Profits, while on the whole not as large as in the previous year, owing to the increasing cost of production, have yet been substantial, enabling directors to declare gratifying dividends, or at least set aside considerable reserves. The market value of shares has improved and will doubtless continue to improve as the public comes to a clearer realization of the foremost place which Canada is bound to take as a producer of these most essential commodities. — From The Globe's Annual Financial Survey.

SMITHS FALLS PAPERS AMALGAMATE.

The Smiths Falls News and the Rideau Record newspapers are to be amalgamated in Smiths Falls, with Mr. Harry Sutton, of the Rideau staff manager of the company. Colonel Balderson, proprietor of the News, still retains his interest in the new company. Mr. G. F. McKimm, for many years proprietor of the Record, is retiring from the newspaper business.

THE BORREGAARD SULPHITE MILLS.

Sulphite manufacturers will be interested in the following data on one of the best known mills in international trading circles. It is taken from Tidsskrift for Pappirindustri, Dec. 31st, 1918.

The General Manager for A. S. Borregaard, Mr. N. Wessel, gave on December 12th a paper on "A. S. BORREGAARD," in Christiania Board of Trade and Commerce. The company is producing in their mills in different places of the world a little more than 180,000 tons air dry bleach cellulose per year. The company has in Norway the following mills:

Borregaard and Hafslund produce 90,000-95,000 tons bleached cellulose, 20,000 tons fine paper, particularly writing paper, 12,000 tons ground wood pulp, and 5,000 tons ferro-celium, besides various other products from brick yards, flour mills, saw mills, etc.

They are using for their own consumption 26,700 horse power from Sarpsfossen. Their property covers 5,00 maal (1 maal = 0.25 aere.) The company are operating their own railway with 6-8 engines and several hundred freight cars. Sarpsborg is consuming 15,000 logs a day. The coal is brought automatically to the mills from silos of 3,000 tons capacity, the boilers, also, are automatically fed.

They own a steamship of 3,000 tons capacity.

For utilization of the tops and slabs of spruce the company has bought Hurum Sulphite Mills of 12,000 tons capacity.

They also own a small paper mill in Drammen for manufacturing special grades of paper.

In Sweden the company owns and operates Klarafors Sulphite Mills, with a production of 13,500 tons strong sulphite, Edsvalla and Forshaga, together producing 23,000 tons bleached sulphite, and Deie Sulphate and paper mill, with a production of 20,000 tons sulphate pulp, and 12,000 kraft paper. Besides these they have a paper mill at Klarafors of 10,000 tons capacity. Further they have a number of ground wood mills with a total production of 18,000 tons and sawmills, with a production of 10-12,000 standards. The power for all these plants is supplied from their own power station at Deie and Frygfors with 7,000 horse powers. This power station also delivers electrical energy to the city of Karlstad and a number of industrial plants.

In Austria the company owns and operates Hallein and Villach, together producing 43,000 tons bleached cellulose, and 5,000 tons fine paper. The Hallein mill has its own water fall and power station, and an electrolytic bleaching plant.

In West England the company has the Barrow mill, with a production of 12,000 tons paper, and 12,000 tons cellulose.

The total area of the company's wood limits in Norway and Sweden is almost one and a half million maal. The annual regrowth in the company's woods exceeds 2,000,000 cubic meters solid measurement. The wood limits in Austria cover 42,000 maal, and are located close to the mills; also here the regrowth is very satisfactory.—G. Hg.

A GOOD TIME TO ENGAGE SAFETY ENGINEERS.

Employers are coming to realize more and more the advantage, especially in large plants, of placing an experienced safety man in charge of accident prevention activities, relieving the executive of much detail work and insuring the maintenance of interest on the

part of foremen and workmen. The closing of munition plants has thrown temporarily out of employment several men with excellent training and experience as safety engineers and inspectors. The National Safety Council has on file the names of these men and their qualifications. If you are interested write us, stating the approximate salary you are prepared to pay, the size and nature of your plant, whether you wish a man for safety work only, or to take up other industrial relations, activities, also, etc.

B. C. WANTS MORE PULP AND PAPER MILLS.

British Columbia is starting an agitation for securing more pulp and paper mills for that province, and looks with longing eye on the Australian field, where the demand for newsprint exceeds the available supply. The Pacific Coast province is abundantly stocked with ideally suitable timber, and well equipped with the necessary water power, yet, at the present time, there are only seven mills operating in the province. It is believed there is ample evidence for the development of mill board and wood pulp board export trade with the Old Country, and that the Panama Canal route should enable B. C. manufacturers to compete with some fairness against eastern contemporaries.

It is also felt there should be a good opening in South China for the sale of Canadian paper of all kinds. During the period of the war Japanese mills endeavored to take full advantage of the difficulty of obtaining the customary supplies from Norway, Sweden and the United Kingdom, but, according to reports received in British Columbia, the Hong Kong buyers are much dissatisfied with the quality of the Japanese products. Chinese stationery is a special kind of paper of an inferior grade somewhat below that of the better class of newsprint used in Canada. There is also a large trade of a kind of paper dyed red and used by the Chinese for decorative purposes.

Owing to the spread of education there has been a great increase in the number and in the size of the newspapers issued in the Chinese language. It is said of the printing paper imported with difficulty by Australia between 1914 and 1917, just eighteen per cent. came from all Canada. The balance was taken almost entirely from the United States. Supplies from Norway and Sweden were shipped spasmodically during the earlier period of the war, but latterly became non-existent. Japan catered to the demand for a while, but not very successfully, while the customary shipments from England dropped off completely. It is felt that British Columbia should have been strongly active in such an easy market, even allowing for the shortage of tonnage. A leading authority on the subject in Vancouver says there should be no doubt of the future increase in B. C.'s proportion of the trade. The eighteen per cent. from Canada should have been seventy-five per cent., for it is certain that Australia cannot hope to make paper from her hardwoods to compare with that which can be turned out from the native spruce of the Coast and other eminently suitable timbers.

Ordinary newspaper does not always need to be freed from printer's ink in order to be able to use it again. For toilet-paper up to 10 per cent., and for rotary-printing up to 40 per cent waste newspaper sent through the edge-runners has been employed with an admixture of tale and with specially careful tinting with indanthreuben GGS and auramin.



UNITED STATES NOTES

A very active demand for labor saving machinery, both in paper mill and jobbers' warehouse, is reported by the Charles Beck Company, which has the Philadelphia agency for cutters, slitters, and tube-making machines. The exceptional demand is undoubtedly due to present high labor costs.

If America is to take full advantage of the position she has gained in the dyestuffs industry through Germany's loss of world markets she must improve the quality of her goods. This is the opinion expressed by Mr. Sidney Rich, who was formerly a consular official in Germany. The need for improvement, says Mr. Rich, means that manufacturers in the United States must go deeper into research work, and base their operations on a scientific basis rather than solely on quantity production. American dyes, according to Mr. Rich, have not yet reached the standards of German dyes. So far American dye manufacturers have been seeking popular shades and quantity production. Closer co-operation among the American manufacturers would mean greater success in capturing overseas markets.

A novel feature, introduced as part of the program at the last monthly dinner of the Purchasing Agents' Association of Northern California, was offered by Mr. Charles P. Armstrong, Pacific Coast representative of the American Writing Paper Company. Mr. Armstrong, showed, during the course of a lecture, the actual manufacture of paper, illustrating by a method of hand production all the various processes involved in the art of making paper.

A. H. Halman, who for many years was connected with the A. Hartung Company, has embarked in business for himself. He has just organized the Federal Paper Company in Philadelphia. The new enterprise, which is to specialize in bond and writing papers, began operations recently at 902 Walnut Street.

Albert Meisterheim, general manager of the Kalamazoo Trading Company of Kalamazoo, Michigan, reports that his concern is extending its activities and adding to its line. It has recently taken on a line of foreign pulps, imported by the Wood Pulp Trading Company of New York City, also wire screens, the product of the Green Bay Wire Screen Works.

The log drives on the Kennebec, Penobscot and other Maine rivers will soon be under way, now that the Maine paper companies have completed their season's work in the woods. Operations this year have been much larger than expected, conditions having been most favorable.

A half million dollar paper mill, with F. W. Leadbetter, one of the Northwest's expert paper mill men at its head, is to be erected in the near future at Salem, Oregon. A sulphite mill, a wood pulp mill, a large boiler house and an acid plant are to go up as adjuncts to the mill. The mill will make a specialty of sulphite papers, the higher grades, and later it may also make newsprint. One of the largest paper making machines capable of producing any kind of paper will be part of the equipment. Work of construction may not be started for a month or so, but notwithstanding this, Mr. Leadbetter confidently

hopes to have the mill in operation one year from now and to be employing 200 men.

The Eddy Paper Company of Three Rivers, Michigan, is to start soon on the erection of its new mill. A box factory will be built first, a power plant will then be erected, and the paper mill proper will follow. Three or four years may pass before the plant is completed. A bonus of \$32,000 offered by the Booster Association of Three Rivers for the erection of the company's new mill in that city is to be forthcoming in three installments of \$8,000, each to be paid upon the completion of a part of the plant.

The Great Southern Lumber Company, in keeping with its plans to make Bogalusa, Louisiana, the centre of paper manufacturing in the South, has purchased the Louisiana Fibre Board Company's mill at Bogalusa, together with all of the latter company's holdings. The sale is said to have involved a very large amount of money paid in cash. The Louisiana Fibre Board Company was a pioneer in the making of pulp and paper from yellow pine saw-mill waste.

Morris Blynn, Joseph D. Cohen, T. J. O'Shannessy and Albert Beck, all of whom have just been mustered out of the service of the United States Army, are the incorporators of a new paper concern to be known as the Blynn Paper Company, whose warehouses and offices are soon to be opened for business at 220 Washington Street, this city. All of the men listed in the incorporation papers were actively associated with the paper business previous to their enlistments. The new firm is desirous of securing agencies for wrapping papers, paper bags, foilet papers, towels, napkins, egg cartons and other paper products of a like nature.

IMPORTATION OF DYESTUFFS.

The U. S. War Trade Board announces that hereafter all applications for licenses to import dyes or dyestuffs must be accompanied by a statement giving complete specifications of the character of the dyes or dyestuffs proposed to be imported. A Supplemental Information Sheet, procurable from the Bureau of Imports, Washington, or from any branch office of the Board, should be used for this purpose.

PULPWOOD IN BRISK DEMAND.

American mills again bought very extensively of Canadian pulpwood. There was a large quantity available, and prices remained firm, an average value to Canadian mills being about \$8.50 per cord, with an advance this year. The official figures show that Americans purchased to an unusual extent, and those in this branch of the trade state that stocks in hand are very large. Canadian mills are also in the same position. The outlook for the present year is for a very much reduced cut, owing to labor shortage, the influenza epidemic, and the difficulty of hauling, in many parts consequent on a small fall of snow. This shortage is not likely to affect mills to any extent this year, but will do so in the following period. For the eight months of the fiscal year the exports of pulpwood totalled \$10,846,864, against \$6,329,763 in the corresponding period of 1917.

Technical Section

A LITTLE TECHNICALITY.

Gosta Hallberg is helping along the future membership of the Technical Section. A baby boy came to his house March 17, and seems inclined to stay. He and his mother are both well, but the latter's general state of health makes it advisable to leave soon for the Pacific Coast. The family is now at Hawkesbury; Mr. Hallberg having resigned as chemist at Smooth Rock Falls for the Mattagami Pulp and Paper Co. Congratulations "G. H."

Sigmund Wang is back at Hawkesbury, after several months in Norway. If he had known what the Publication Committee has to do pretty soon he would probably have stayed over there.

Two more members have been added to the Technical Section: F. J. Leduc, Belgo-Canadian Pulp and Paper Company, Shawinigan Falls, and Charles W. Whitehouse, Abitibi Power & Paper Company, Iroquois Falls, Ont.

From the Council Chamber.

A. L. Dawe says the Council re-elected all Chairmen of Committees as of last year. That means either that we are giving satisfaction or they can't find anyone else. Let's go to it, fellow-chairmen; make this year a hummer.

Special recommendations were made to the Committee on Education as to expediting the preparation of text-books and the Committee on Moisture asked to carry out further tests on lapped and hydraulic pressed pulp as well as rolled and baled pulps.

One very important decision arrived at was that the Council decided to ask Canadian universities to impress upon all students the desirability of their considering the pulp and paper industry as a future livelihood. The Secretary was instructed to circularize the mills to find out those who would be willing to give summer employment to any Canadian students, and it was proposed that three prizes of \$100, \$50, and \$25, with accompanying medals, be given for the best essay on "My Summer's Work in the Pulp and Paper Mills."

Summer Meetings.

Through the courtesy of Sir William Price the members will have an opportunity of visiting the Kenogami mills of the Price Bros. Company. So as not to conflict with the spring meeting of the T. A. P. P. I. which is to be held in Buffalo on June 11th, it was decided to call the Summer Meeting for the end of July. Full details of the meeting will be sent out very shortly as a very large attendance at this meeting is expected. It will include the wonderful boat trip down the St. Lawrence and up the Saguenay. Technical papers will probably be read on the boat, when regular business, etc., can also be disposed of.

A cordial invitation has been received from the Technical Association for a joint meeting in Buffalo and vicinity, June 11-14. The invitation of Sir William Price had already been accepted, so a fully representative joint meeting could not be managed. There will be many Canadians present, and the mills of the Niagara Peninsula will arrange for visits by those attending the meeting. One day will be spent at the Hammermill plant at Erie, Pa.

The Council of the Woodlands Section have decided to hold the summer meeting at the end of June

at Berthier, taking advantage of the offer of Mr. Piche of the large building at the Berthier Nurseries for this purpose.

The Section has, at the same time, a very cordial invitation from the Laurentide Company to visit their nurseries and while it is a little early yet to give definite dates and particulars, please bear in mind that this should be one of the most important conferences that have been held for many years.

REVIEW OF RECENT LITERATURE.

A-14. Differentiation of Soda and Sulphite Pulps. P. Klem, "Wochschr. Papierfabr." Vol. 48, pp. 2159-61. (In German).—Pulp prepared by sulphite process contains residues of the wood substance. In soda pulp, the more drastic chemical treatment destroys these residues. The residues may be stained readily, depending on the presence of resin, so that care must be taken not to dissolve the resin if NaOH is used in preparing the slide. A solution of rosaniline sulphate, with a little ethyl alcohol and H₂SO₄, stains the contents of the pitted pores strongly in the case of sulphite pulp, but not with soda pulp. As little as 5 per cent sulphite pulp can be determined in a mixture.—Paper Makers Mo. J.

F-5. Soda Wood Pulp by Ungerer's Process. Ziegelmeyer, C. "Papier Zig." Vol. 42, pp. 1855-6. (In German).—In this process, the digestion of the wood by the soda or sulphate process is carried out fractionally by the counter-current principle. A battery of boilers is used, and the spent liquor comes in contact with fresh wood. At Stuppach a pulp mill using this process is producing about 5 tons of pulp daily. The pulp can be bleached with a 1 to 2 per cent bleaching powder.—Paper Makers Mo. J.

K-6. Process for treating certain plants for making paper, and other products therefrom. (Procède pour le traitement de certaines plantes en vue de la fabrication du papier et produits en resultants). Le Papier, 1918, 21, p. 191. French patent No. 486,393, granted to the Societe A. Olier & Cie., Puy-de-Dome, France.—The process consists essentially in treating freshly-cut green plants with an alkaline solution, at atmospheric pressure, at a temperature below the boiling-point of the solution, and in separating the fibres in a beater, either before, during or after treatment with alkali. It is claimed that raw material can be converted into material suitable for paper making within 4 hours' time. The process may be modified by treating the plants at the ordinary temperature. This requires a much longer time, which may even reach 4 weeks. By careful manipulation, the alkali does not dissolve the ligneous matter, but merely softens it and at the same time "hydrates" it. This has a three-fold advantage: it renders the stock "self-sizing," i.e., no other sizing need be added; the fibres swell considerably and can carry a large amount of mineral matter; and the yield is much greater than with the methods of cooking at high temperature and pressure, sometimes being increased by as much as 50%. Some plants are not suited for this treatment, and a test is described which permits of judging, to a certain extent, whether a given material would give good results. When the fresh-cut green plants cannot be treated immediately, they may be crushed between

rolls, and dried, and subjected to treatment at any subsequent time, using a little more alkali and a slightly higher temperature than with green material. If care is taken not to add an excess of alkali, it will all be neutralized, and all washing may be eliminated if desired. The process lends itself to many varieties by means of which many different kinds and grades of paper may be obtained.—A. P. C.

K-12. Fourdrinier paper machine. J. Alpine, Stevens Point, Wisconsin, U. S. Pat. 1,275,826. J. S. C. I. 37, No. 21 (1918).—The frame of the machine is carried on a platform pivoted on a fixed bed at the receiving end and adjustably connected with the bed at the other points, so that the further end may be raised or lowered. The frame carries a breast roll at the pivoted end, a couch roll at the end distant from the pivoted end, and a set of suction-boxes between the two rolls. Another suction-box is supported by the platform beyond the couch roll and a take-off is similarly supported between the couch roll and the last suction-box, a take off conveyor being arranged to travel over the take-off roll and the suction-box associated with it. Means are provided for adjusting the inclination of the platform and frame.—D. E. S.

K-12. Paper-making machines. Anon. Chem. Ind. 37, No. 20 (1918).—An English patent No. 118,511, granted to E. Partington, of Worcester, Eng. Some of the drying cylinders over which the web of paper first passes are maintained at a temperature higher than that of the remainder of the cylinders, and sufficient to impart to the damp paper enough heat to cause the water therein to evaporate freely as it passes over the lesser heated cylinders. For instance, in a range of 16 cylinders the first five may be heated so as to raise the temperature of the web to 200 F., and the temperature of the succeeding cylinders may fall progressively at the rate of about 10 F., so that the temperature of the last is about 90 F., thus preventing baking and cockling of the paper.—D. E. S.

K-14. Method and means for finishing paper to produce cloth finish. Anon. J. S. C. I. 37, No. 22 (1918). U. S. Pat. No. 1,277,714, granted to H. J. Guild, assignor to Eastern Mfg. Co., Bangor, Me. — Belts of suitable textile material are fed between two rollers, the paper under treatment lying between the belts. One of the rollers is of a hard material and the other is of a material sufficiently yielding to bring about a slight relative motion between the paper and the belts while under the pressure of the rollers, but at the same time has sufficient compressive rigidity to ensure that each side of the paper receives an impression of the textile belt with which it is in contact.—D. E. S.

K-18. Corrugated cardboard with metal sheeting. (Carton ondule a face metallique). Le Papier, 21, p. 210 (1918). French patent No. 488,860, granted to the Societe Belge de l'Ondulium, Belgium.—A. P. C.

K-18. Fiberboard resistant to fire and water. A. L. Clapp, U. S., 1,280,400, Oct. 1.—A fire and water-resisting fiberboard is prepared by treating bark, moss, straw or similar vegetable material with a solution of caustic alkali partially to dissolve the material, mixing the solution and residue thus obtained with wood pulp, jute or other fibrous cellulose in H_2O , reducing the fibrous cellulose and other solid constituents of the mixture to a finely divided condition, forming the stock into sheets after the addition of a metallic salt such as alum to precipitate the

dissolved cellulosic material throughout the mixture, and drying the sheets.—Chem. Abs.

K-19. Etchable coated paper. Anon. J. S. C. I. 37, No. 22 (1918). An English Patent, No. 119,368, granted to J. Milne, Toronto, Canada. Paper is coated with a composition prepared with 290 lbs. of blanc fixe, 580 lbs. of china clay, and 65 gals. of water mixed, a solution containing 125 lbs. of gelatin, 2 lbs. of glycerin, and 12 oz. of aluminum acetate in 25 gals. of water. The coated paper is printed with a medium capable of resisting the etching liquid, and then heated for a short time with a dilute solution of bleaching powder. The acidity of the aluminum acetate causes the formation of hypochlorous acid which destroys the binding qualities of the gelatin in the exposed portions of the coating, so that the materials of the coating can be washed away, leaving the printed device in relief.—D. E. S.

K-23. Transfer-sheet. A. L. Clapp, U. S., 1,280,399, Oct. 1.—Transfer-sheets for embossing or stenciling on leather, cloth, silk or other materials are prepared by coating paper on one side with a composition composed of amyl acetate 6 cubic centimeters, rosin 2 grams, linseed oil 1 cubic centimeter, nitrocellulose 0.5 gram, and a colored powder, such as bronze powder 4 grams. The paper may be first coated with dextrin to prevent penetration of the color mixture. CCl_4 and rosin, or alcohol, rosin and shellac may also serve as vehicles for the color powder.—Chem. Abs.

K-23. Indurating and waterproofing fiber board. W. V. Lauder, U. S., 1,278,934, Sept. 17.—Fiber board or similar porous material with a solution of rosin and petroleum residuum in gasoline to fill the pores of the material and the gasoline is afterward evaporated from the impregnated material.—Chem. Abs.

K-23. Translucid reinforced paper. (Papier translucide arme et son procede de fabrication). Le Papier, 21, p. 194 (1918). French patent No. 488,577, granted to Edmond Bellan, Seine, France. —The process consists in binding two sheets of paper, between which are placed metallic or textile threads, by means of a glue which renders the paper translucid. —A. P. C.

L-4. Cardboard containers for canning. (Boites de conserve en carton). Bulletin of the Australian Scientific Society, through Le Papier, 21, p. 210 (1918).—Cardboard containers are coated with a methyl alcohol solution of a special resin, obtained by the action of carbon dioxide and formaldehyde, thereby preserving the contents from decomposition.—A. P. C.

L-4. Paraffined cellulose containers, for chemicals. (Recipients en cellulose paraffinee pour produits chimiques). Le Papier, 21, p. 194 (1918). French patent No. 488,457, granted to the Etablissements Poulenc freres.—Containers for caustic or easily decomposed chemicals are made by moulding hot paraffined cellulose. The stopper consists of a piece of paraffin or paraffined cellulose.—A. P. C.

L-4. Tubes of fibrous material and phenolic condensation product. J. T. Frederick, U. S., 1,284,298, Nov. 12. Tubes adapted for use as electric insulation are formed by treating paper with a phenolic condensation product which will serve as a binder, winding the dry sheet around a mandrel without applying heat or pressure to build up a tubular body and then applying heat and pressure so as first to soften and then to harden the phenolic condensation product. (W. H. Kempton's pat. 1,284,363 is similar).—Chem. Abs.

**PRICE BROS. & CO. PROGRESSIVE.
Kenogami.**

No charge of laxity can be laid at the doors of Messrs. Price Brothers and Company, or their Manager, Mr. John Ball. "Progression" is their creed, and no effort is spared to practice it. No better proof of this can be given than the figures appended. The company found its product was so good it commanded a ready market, and did not hesitate to put in additional grinders, digesters, and an additional paper machine, to meet the increased demand. The country was at war, money difficult to obtain, the price of materials almost prohibitive, but there was no sign of the white feather. The work had to go ahead, and in this decision the management was influenced just as much by the idea of business progression as in the welfare of the workers, who naturally would benefit also.

No other mill in the country can boast that its entire production of newsprint is covered by only four contracts. The principal credit is of course due to that Prince of Papermakers, Mr. John Ball, but he, himself, is the first to admit that he could not have obtained the results he has without the very active co-operation of his directors, and of the organization he has under his control.

	1914.	1915.	1916.	1917.	1918.
	Tons.	Tons.	Tons.	Tons.	Tons.
Groundwood	35,228	34,521	40,419	46,942	58,500
Sulphite	9,036	15,134	24,209	24,532	25,000
Paper	42,806	47,182	49,763	52,437	64,000
Total Product	87,070	96,837	114,391	123,911	147,500
No. of Men	462	445	500	566	609
Tons Product					
Per Man	194	219	228	219	242
Tons of Paper					
Per Man	92.7	107	99.5	92.6	103.8

Jonquiere.

The preceding paragraphs denoted the progress of the Kenogami Mills, we now give figures to illustrate the advance made at Jonquiere. It will be remembered that prior to 1914, this mill had been in operation under the present company for some twelve years or so:

Groundwood	6,939.5	6,262.7	9,242.3	5,516.3	13,000.0
Cardboard	5,373.1	5,982.7	7,175.7	6,050.7	7,800.0
Paper	5,116.4	6,315.1	9,349.1	9,541.5	10,101.6
Total Product	17,420.0	18,560.5	25,767.1	21,108.5	30,901.6
No. of Men	164	184	198	183	206
Tons Product per Man	106.0	100.8	130.1	115.3	150.0
Tons Paper per Man	31.19	34.3	47.2	52.1	49.03
Increase in Wages, 1915 to 1918—90.87 per cent.					
Increase Product per Man was 50 per cent—or 50 tons.					

NOTE.—Groundwood mill was closed for four months in 1917 for reconstruction. This meant, practically, a loss of 3,800 tons of groundwood, which was the production for the corresponding four months of 1916.

The same dominant forces which have been at work at Kenogami are in evidence here, and the results achieved are perhaps more remarkable. When they took over the mill it was in poor condition. It has now been practically re-built, and may be described as a modern and up-to-date establishment, although

INQUIRY FOR MILLBOARD—A SIGNIFICANT DROP.

Manchester, Eng.—As the result of investigations it is learned that there is at present a big demand for millboard and wood-pulp board. The scarcity of wood during the last three years has brought board boxes into more common use, and as they have been found to answer the purpose for which they have been utilized, the demand is likely to be much greater in the future than it was in pre-war days.

In 1913 the quantities annually imported exceeded 1,300,000 hundredweights. The quantities fell, owing to lack of transportation facilities and other causes, to 879,990 hundredweights in 1916, and to 241,967 hundredweights in 1917. The leading sources of supply before the war were Russia, Sweden, Canada and Germany. Small quantities were imported from the United States, and these have advanced from 28,136 hundredweights in 1913 to 114,134 hundredweights in 1916. Canadian supplies have diminished year by year, the quantities being 225,615 hundredweights in 1913, 169,802 in 1914, 211,722 in 1915, 139,626 in 1916, and 38,366 hundredweights in 1917.

Samples of boards have been forwarded to the Department of Trade and Commerce, Ottawa, and after inspecting the same firms desirous of increasing their sales should forward prices to the Manchester inquirer, whose name and address accompanies the samples. Refer to File 20060.—Trade Commissioner J. E. Ray.

FATAL ACCIDENT IN PAPER MILL.

John Pshiek, an Austrian, employed as papermaker, in the Fort Frances Pulp and Paper Mill at that place, met his death instantaneously while on duty on March 19, about 10.30 p.m. In attempting to remove a loose piece of paper from the rewind rollers, his hand was jerked between the rolls and instantly drew his head and body in up to his waist. A pressure of some five or six tons crushed the life out. He was taken lifeless from the machine, his head and body badly mangled. He leaves a wife and one child to lament his early decease.

	1914.	1915.	1916.	1917.	1918.
	Tons.	Tons.	Tons.	Tons.	Tons.
Groundwood	6,939.5	6,262.7	9,242.3	5,516.3	13,000.0
Cardboard	5,373.1	5,982.7	7,175.7	6,050.7	7,800.0
Paper	5,116.4	6,315.1	9,349.1	9,541.5	10,101.6
Total Product	17,420.0	18,560.5	25,767.1	21,108.5	30,901.6
No. of Men	164	184	198	183	206
Tons Product per Man	106.0	100.8	130.1	115.3	150.0
Tons Paper per Man	31.19	34.3	47.2	52.1	49.03

perhaps, inconveniently situated. The old sulphite digester, which was not in use, was removed to Kenogami, where it is doing good service, and the position it occupied otherwise utilized. In 1917, new water wheels were put in, and a new grinder room built, with additional grinders. The result is apparent from the figures. A large and convenient finishing room has been added, and the working conditions generally are much improved. But we will let the facts speak for themselves.—Kenogami Tickler.

PULP AND PAPER NEWS



George H. Mead, of Dayton, Ohio, was in Toronto last week attending a meeting of the directors of the Spanish River Pulp and Paper Mills, Limited, of which he is President. He recently returned from Miami, Florida, where he was a member of a fishing party, which captured a huge shark weighing 1,100 pounds, and measuring more than sixteen feet in length.

J. F. Ellis, of Toronto, President of the Canadian Paper Trade Association, who has been spending several weeks in Florida in company with Mrs. Ellis, returned home during the past week after a very pleasant winter outing in the south.

Harry L. Wilson, of the Winnipeg Envelope Co., Winnipeg, who is a former resident of Toronto, spent the past few days in Montreal, Toronto and other points east on a business trip, and called upon many friends in the trade.

John Robertson, of the Wardrobe Chambers, London, Eng., who for several years has represented a number of American mills in the Old Country, was in Toronto and Montreal last week in the interest of overseas paper trade and placed a number of orders for export. He is a former resident of Montreal, and his many old friends were pleased to greet him.

During the coming summer one of the largest and most influential parties of United States editors, which has ever come up from the south, will visit the Canadian West. It is understood there will be three hundred in the company, and that every State of the Union will be represented. Arrangements have been made for the trip by J. Bruce Walker, Director of Publicity for the Department of Immigration.

Guy F. Warwick, who for many years was a member of the firm of Warwick Bros. and Rutter, manufacturing stationers, Toronto, died suddenly last week at his home, aged sixty-three years. He joined his father in business in 1881, and remained with the establishment until 1897, when he retired. Surviving him are his wife, one son and two daughters. His brothers, George R. and Charles E. Warwick, are still active in the business of Warwick Bros. and Rutter.

George E. Challes, of Toronto, sales manager of the Riordon Pulp and Paper Co., returned last week from an extended business trip to Michigan, Iowa and Ohio, where he was calling upon all the book mills. He reports that the majority of them are running light, but that they confidently expect business will pick up materially in the near future.

On the Commission, which will be appointed by the federal government to inquire into the best methods of securing an entente between Labor and Capital, it is stated that Smeaton White, of the Montreal Gazette, will be one of the representatives chosen. Mr. Justice Mather, of Winnipeg, will be the Chairman of the Commission.

It is understood that the printers of Toronto, Ottawa and Montreal will shortly present a claim for much higher wages owing to the increased cost of living.

The present scale in the job offices in Toronto is \$24 per week. In Windsor, Ont., the printers recently received an increase of \$8 per week, and it is stated that the Typographical Unions of Ottawa, Toronto and Montreal, will ask for \$32 per week.

Owing to repairs being made to the basin of the Cornwall canal the plant of the Provincial Paper Mills Co., at Mille Roches, Ont., was closed down for several days last week, but the industry is again in full operation. The Barber mill on the Credit river at Georgetown, which had a mild freshet was shut down for a day and a half recently until the trouble was over.

A charter has been granted to the Midland Woodworkers, Limited, with a capital stock of \$500,000 and headquarters in Toronto. The company is empowered to manufacture, buy, sell and deal in wooden, corrugated paper and fibre board boxes and shooks, lumber, and woodwork and wood products of all kinds.

It is announced that the Abitibi Power and Paper Co., of Iroquois Falls, Ont., contemplate erecting thirty or forty workmen's residences this summer and the work will give employment to a large number of men.

Many friends in the publishing field will regret to learn of the death of N. B. Colecock in London, Eng., who passed away recently in the seventy-sixth year of his age. He was formerly Agent-General for Ontario in the British Isles. Mr. Colecock established the Welland Telegraph and in 1883 went to Brockville to conduct the Times which was later acquired by A. T. Wilgress, now King's Printer for Ontario.

A charter has been granted to Les Ateliers de Menuiserie d'Amos, Limitee, with headquarters at Amos, in the district of Quebec, with a capital stock of \$20,000. Among the powers conferred on the company is to manufacture, sell and deal in pulp and operate pulp making plants.

Sautauriski Lumber Co., Limited, has been granted a federal charter with a capital stock of \$200,000, and head offices in Donnacona, Que., to carry on in all its branches the business of a manufacturer and dealer in logs, timber, pulp, pulpwood, paper and other products and by-products of wood and pulp.

The city architect's department of Toronto has taken active steps to guard against the use of a certain make of wall-board for interior finish in houses instead of plaster. In every instance where the material has been used in bedrooms, the inspectors of the building department have ordered that it be torn off and replaced by plaster on the ground that the board, in case of a fire, makes such a smoke as to choke any person in a room so that escape would be very uncertain.

Alex. Elison, who was President and Manager of the Paper and Hardware Products Co., Montreal, was recently sentenced to three years on the charge of forgery, in connection with bills of lading for ears for scrap metal, the signatures of which he forged and on which he raised money.

J. T. Stirrett, who has been editor of "Industrial Canada" for the past seven years, has been appointed General Secretary of the Canadian Manufacturers' Association, Toronto.

There was seven feet of snow at Frazerville last week. A sudden thaw would bring chances of quite a flood.

Brig.-General White, in charge of woods operations for the Riordon Co., says their logs are all hauled out, ready for the drive. They look for the break-up most any time now.

The agitation for developing the French River so as to provide a water route from Georgian Bay (wet), to North Bay (dry), seems to be quieted for the present by the attitude of the Minister of Public Works at Ottawa. "Nothing doing this year," says Sir Joseph. But the idea is not dead by a good deal.

Flight-Lieut. R. B. Hall is back from the other side and is resuming his connection with the Howard-Smith Paper Mills, Ltd.

Another H. S. P. M. man came in Monday night and was welcomed at the station by Messrs. Dawe, McLean, Larkin and other old associates. The hero was Q.M.S. John J. Kelly, M.C., D.C.M. He goes back to his old job.

The Howard Smith mill at Beauharnois is now equipped with a chemist. Mr. Gorman, the newcomer was with the Mead Paper Co. at Chillicothe, Ohio. He and Mrs. Gorman attempted to come through in a motor, but stuck in a snow-drift at Oswego last Tuesday.

E. Simonson has severed his connection with the Bathurst Lumber Co., and has gone to Buffalo, N.Y., where he will establish himself as consulting expert. As superintendent of the Bathurst sulphite mill he has improved the quality and greatly increased production in a very short time without making extensive changes in equipment.

The editor of the Pulp and Paper Magazine, with Mrs. Stephenson and Miss Scott, of St. Albans, Vt., visited the Beauharnois plant of Howard Smith Paper Mills, and were much impressed with this fine mill. In the absence of Mr. Courtney, who is resting at Atlantic City, Mr. Metcalfe proved a very good host. Mr. Stickles was at the mill, installing a steam control apparatus on the paper machine. Plans seem quite complete for the new paper machine that is being built by the Dominion Bridge Works.

Royal Securities Corporation, Limited, announces that it has purchased from Fraser Companies, Limited, the New Brunswick lumber operators, \$2,000,000 six per cent. first mortgage bonds maturing serially from 1919 to 1929.

The new financing is to reimburse the company for expenditures upon a new 35,000-ton bleached sulphite pulp mill at Edmundston, N.B., which went into operation last December. The new mill is situated in close proximity to pulpwood supplies exceeding 4,650,000 cords, and is strategically located in relation to both the American and British markets.

Mr. Leon A. Nix, a graduate of Syracuse Forestry School, and recently with the Chemical Division of the United States Army, at Baltimore, has been made assistant to Mr. Galarneau, Forester for the St. Maurice Paper Company, with headquarters at Three Rivers, Quebec. Mr. Galarneau will begin his work with a map and estimate of the timber lands of the company.

Geo. Wilson, of Clark Bros. & Co., Ltd., Winnipeg, who has been in California during the past two months seeking renewed health, is so far recovered that he is expected back at his desk early in April.

John Martin, of the John Martin Paper Co., Winnipeg, who has been ill for several months, is at present in Florida recuperating. Recent advices indicate that he is slowly regaining his health and strength.

RE-ENTER, MR. MCINTYRE.

The Editor and Publisher, New York, says that A. G. McIntyre, special representative of the Committee on Paper of the American Newspaper Publishers' Association, has resigned to give his entire time to his private interests.

He is interested in some two or three pulp and paper mills, both in the United States and Canada, and will build a pulp mill in Canada this summer, the details of which will be announced in the trade papers in the course of two or three weeks.

Mr. McIntyre is leaving for Hot Springs with his family for a month, after which he will go to Canada to start the construction of his new mill.

MR. BULMAN CELEBRATES FORTY-NINTH BIRTHDAY.

William J. Bulman, of Winnipeg, President of the Canadian Manufacturers' Association and head of the widely known firm of Bulman Bros., Limited, lithographers and printers, celebrated his forty-ninth birthday on April 5, and received the congratulations of a large number of friends. Mr. Bulman, who was born and educated in Toronto, began his business career as lithographer with Alexander and Cable, Toronto, thirty-four years ago and in 1892 left for Winnipeg, where he established his present organization. He is an aggressive and wide-awake business man and has held many important offices. He was President of the Winnipeg Industrial Bureau for two years and is an ex-member of the Advisory Board, Department of Education for Manitoba, as well as Vice-President of the Manitoba Patriotic Fund, a member of the Council of the Winnipeg Board of Trade, and Vice-President of the Canadian Reconstruction Association. Mr. Bulman has served on the School Board of Winnipeg for many years and was the originator of the Imperial Home Re-union Association and President of the Winnipeg Branch. He is the father of the idea of the movement for the promotion of citizenship through the Public Schools of Canada and a national conference of the educational leaders and business men is now being originated at which leading exponents from abroad will be present and give counsel. Mr. Bulman has always taken a deep interest in the affairs and progress of the Canadian Manufacturers' Association.

One Year of Safety Work,

by the Four Wheel Drive Auto Company reduced accident frequency by 55 per cent; reduced the number of hours lost per employee by 83 per cent; reduced the compensation paid per \$100 pay-roll from 94 cents to 26 cents—comparing 1918 with 1917. This was accomplished in spite of an increase of 105 per cent in the number of hours worked during the year. The time thus saved was enough to build thirty additional motor trucks for the American Army!—The Army now has enough motor trucks—but industry still needs whole men.



CANADIAN MARKETS.

Toronto, April 7.—There is no radical change in the pulp and paper market, but with the advent of spring, business in many lines is picking up. The export demand grows constantly and, during the first ten months of the present fiscal year shipments of pulp and paper amounted to over eighty million dollars, which shows a gain of over twenty-one million dollars during the corresponding period of the previous fiscal twelve months. Coated paper plants are busy, envelope factories are active, and wrapping paper industries are beginning to receive more orders.

As the weeks glide by, the big mills are looking more and more to the export situation, and the announcement that the Canadian Export Paper Company has opened an office in London, Eng., is a significant omen of the trend of events. The only things standing in the way of heavy exports at the present time are lack of bottoms and excessive freight rates. The pulp companies especially are hoping that some avenue will be opened up in the near future to allow the shipment of their surplus product abroad. Stocks are getting pretty large, although production has been considerably curtailed. Mills across the line are buying only in limited quantities.

There have been frequent rumors that there has been a drop in the price of sulphite. As far as can be learned, the figure which is prevailing at the present time, is \$90, f.o.b. mill, for book sulphite. There has been a decline in the quotation for bleached, which is now being disposed of at \$100 to \$105 at mill. Representatives of Canadian firms, who have recently returned from extended trips to the United States, report that the market continues dull, and the majority of the plants are working only to part capacity, but prices are being well maintained. There is no talk heard of lower wages, and as long as the figure for raw materials, coal, transportation, cost of living and other items are at their present level, there will be no radical recession in the value of the finished article. As mentioned recently, there was a reduction of about eight per cent on toilet papers; the discount which was formerly 17 per cent, being now 25

on all lines, with additional discount for large orders. There has been a slight drop in the price of bristols of the cheaper variety. Wrapping papers are holding their own, and it looks as if the mills will enjoy a very fair summer.

The eyes of the world are being directed more and more to Canada as a pulp and paper centre, and it is being demonstrated that the plants in the Dominion can produce pulp of as good quality, purity and texture as any country in the world. The output of bleached pulp is being increased all the while, and more concerns will bleach their product before the end of the present year, thus enjoying a wider market for their goods.

An interesting experiment is being conducted by the Provincial Paper Mills Co. through its subsidiary organization, the Port Arthur Pulp and Paper Co., where recently a quantity of sulphite pulp made from poplar wood was made. Some ears of this pulp have been shipped to the Montrose plant at Thorold, where book paper will be manufactured from it, and if the paper turns out satisfactory, it may be important in the matter of the future use of raw materials here.

Envelope manufacturers have been much interested in the announcement from Washington that the two cent postage rate on letters and the one cent postage on drop letters would be restored on July 1st next. It is not likely that the old rate will revert in Canada for some time to come, as the war tax of one cent has produced an extra revenue of about six million dollars a year, and this looks good to the Finance Minister at the present time.

Jobbers report that business for the first quarter of the present year has on the whole exceeded that of the corresponding three months of 1918, and deliveries have been far better. All orders are filled with reasonable promptness, and while large consumers are only buying as necessity demands, there are many more smaller consignments going out which rolls up the volume. Collections are good and travellers report an increased showing in orders each week.

The Ontario Government has been petitioned by the

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES 2074 MURRAY HILL, NEW YORK
2075

We are always in the market
and ready to pay good prices
for

SULPHITES

Bleached and Unbleached of
Canadian manufacture.
Write and let us show you
what we can do.

Associated Boards of Trade for the Province to build the E. & N. O. Railway from Cochrane to James Bay, a distance of about 160 miles, which extension would open up a country rich in pulp wood and forest products. The exploration of Ungava, which will be undertaken this season by the Quebec Government, is also expected to reveal much pulpwood wealth. The Canadian Pulp and Paper Association has called attention to the fact that the export value of pulp wood are now over double what they were two years ago. This is caused by the higher price of wood, and also to an increase in the amount exported. Millions of dollars' worth of raw material are still going to the other side of the border which could and would be turned into a finished product in the Dominion if more encouragement had been given to the pulp and paper industry. This fact is being brought home more and more and it is hoped, with the signing of the Peace treaty, that federal regulation and arbitrary interference with prices will be a thing of the past, and that many of the large corporations which have been hanging back, will proceed with the enterprises, which they have in hand, but have deferred owing to short sighted action of the Ottawa administration.

The Canadian Commissioner in Paris has sent word to Ottawa that Canadian paper manufacturers should study immediately the proper means of organizing their trade on the French market. Dealers in Paris are anxious to get supplies of book paper, wrapping paper and other lines. It is pointed out that Scandinavian papermakers have already put forth a serious effort to capture the French trade, and it would be regrettable if Canada and the Allies should find their places taken. (We have names of some agents.)

One leading company is conducting a vigorous campaign in Toronto for rags, of which 1,000 tons are desired. It is also stated that 2,000 tons of waste paper and books are required. For mixed rags of all kinds from one cent a pound up, according to quality, is being offered; for tailor clips, three cents a pound up, according to quality. For newspapers and books, bundled, the figure is 25 cents per hundred pounds, and for loose papers and books, 20 cents per hundred.

NEW YORK MARKETS.

New York, April 5.—Moderate activity prevails in the local paper market. Demand has improved to quite an extent during the current week, and the market appears to be gradually but surely working into that position anticipated by traders for some time. Buyers are showing decidedly less reluctance to operate, jobbers and dealers are augmenting their stocks with greater freedom, and mills are booking more business than for some months. The situation from every point of view is undergoing improvement. Export demand is expanding to the same degree as that from domestic sources, and new markets are being constantly opened up in foreign countries, which means that the expansion in business should be made permanent.

Prices are characterized by more firmness, and values are rapidly becoming stabilized on definite levels. Of course, there is still wide fluctuation because manufacturers are repeatedly changing their quotations in their efforts to secure orders. This, however, is nothing more than an ordinary condition,

and such price revisions as are being effected are of a healthy character.

The demand for newsprint is good. As previously pointed out in this report there is an advertising boom on in the States, and newspapers and current periodicals are finding it necessary to enlarge in order to provide space for the increased amount of advertising they are carrying. This, of course, is resulting in a larger consumption of paper, and the average publisher is not only using the entire amount of paper received on contract as soon as it is delivered, but is having to purchase additional supplies in the open market. Prices are firm, and the tendency on those grades of news not governed by fixed prices is upward in price. Book mills are getting more business than for some time. Most of them continue to run at below capacity, but demand is on the increase, and it appears that ere long manufacturers will have a sufficient volume of orders to necessitate their operating on full time. Reports are heard of sales being made at figures slightly under those generally named in the trade, but such transactions appear to be only in instances where mills have not regular contracts with consumers.

The fine paper market is holding its own. Demand is not brisk, but mills as a rule are securing a fair amount of business, and prices are being maintained. Buyers continue to show preference for the cheaper grades of bond and ledger paper, and manufacturers are frank in saying that they expect this condition to exist for some time owing to the fact that during the war period consumers became accustomed to using the lower qualities of writing paper. Tissues are moving with regularity and in good volume. Prices are firm and the trend, if anything, is toward higher levels. Coarse papers show little change. Demand is not as broad as usual at this season, but dealers and manufacturers are hopeful that as the Eastertide draws near, large consumers of wrappings will come into the market for increased supplies.

The board market is steadily growing more active. Box makers are laying in spring stocks, and mills are getting more orders than at any time for several months. Prices are on the up trend. Chip board is quoted at between \$38 and \$40 per ton at the mill, and it is questionable whether sizable lots can now be purchased at less than the lower figure. News and straw board are freely sought and firm in price.

GROUND WOOD.—The mechanical pulp market is marking time. Current demand is, in the aggregate, quiet, yet there is a moderate amount of business being done, and prices are holding steady. Reports are heard from time to time of this or that producer lowering prices, but it is believed that the reduction applies only to limited lots of pulp which the holder is anxious to move. Between \$25 and \$26 per ton at the grinding mill is the range of quotations on pulp of No. 1 quality for spot shipment.

CHEMICAL PULP.—Only a routine demand prevails for chemical pulp, and the market has undergone little or no change this week. Consumers are buying in piecemeal fashion, limiting their purchases to lots directly required and evincing a lack of disposition to anticipate their forward needs. Prices on domestic sulphite range around 5.50 cents per pound at the pulp mill for bleached of No. 1 grade, and 3.50 cents for unbleached of newsprint quality. Domestic easy bleaching is selling at \$80 to \$95 a ton, depend-

WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

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Rio de Janeiro, Brazil.



SALE OF *Surplus Military and Naval Stores*

DRY GOODS, CAMP SUPPLIES, FOOD HARDWARE, SCRAP METAL, JUNK

Cloth: new and second-hand clothing, equipment, hardware, tents, blankets, camp supplies. :: Flour, jam, canned evaporated milk, tea, coffee, etc. :: Condemned clothing, junk, old brass, metals, leather, rubber, etc.

SALES WILL BE MADE BY SEALED TENDER.

Persons desiring to tender are requested to communicate with **THE SECRETARY OF THE WAR PURCHASING COMMISSION, BOOTH BUILDING, OTTAWA**, stating the items in which they are interested, whether new or second-hand or both.

Arrangements will be made to have samples on exhibition at places throughout Canada; specifications, full details, and tender forms will be mailed when ready to those who have registered as suggested above.

IF INTERESTED PLEASE APPLY NOW.

Institutions May Make Direct Purchase Without Tender.
--

<p>Dominion, Provincial, and Municipal departments, hospitals, charitable, philanthropic, and similar institutions which are conducted for the benefit of the public and not for profit may purchase goods without tender at prices established by the War Purchasing Commission.</p>

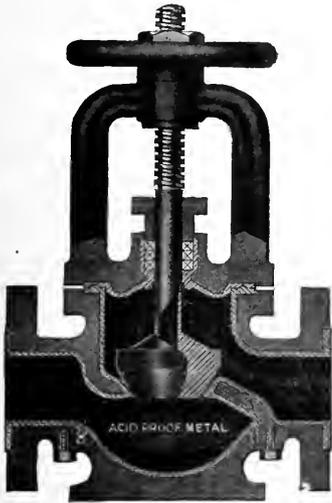
All communications should be addressed to the Secretary, War Purchasing Commission, Booth Building, Ottawa, who will be glad to supply lists and further details to those interested.

ing on the grade and the amount concerned, while domestic kraft is quoted at \$85 to \$90. Importers report transacting little business of an important character. Available supplies are held with firmness, however, and in the absence of selling pressure, quotations are fairly well maintained at levels of nominally 9.00 to 9.50 cents for foreign bleached and 5.50 to 5.75 cents for unbleached sulphite.

RAGS.—Paper mills are buying very few rags on the whole at present. Orders are being received by sellers of course, but the aggregate volume of supplies moving into channels is light, and dealers express surprise over the lack of worth while interest

shown by manufacturers. Prices are fairly well maintained, chiefly by the refusal of holders to sell at lower prices. Consumers apparently look for a decline in the market, and are purposely holding aloof as buyers; dealers, on the other hand, can foresee nothing but a strong situation ahead, and are declining to cut prices to levels at which mills could possibly be induced to buy. How much longer this dead-lock condition will exist is problematical, but in the meantime manufacturers are absorbing merely such rags as they actually need, and business suffers thereby. Repacked thirds and blues are selling in a small way at around \$3.25 per hundred pounds f.o.b. New

ACID RESISTING PUMP VALVES



We wish to call your careful attention to our line of Acid resisting Pumps, Valves and Fittings, they are absolutely perfect in detail. In price comparison with Acid Resisting Bronze Valves etc. they make an enormous saving in your initial cost.

For lining Acid Tanks, Agitators, and Sulphite or Sulphate Vats, Hoyts Sheet Metal will give far better service than the ordinary Chemical Sheet Lead in the market. If you will write us stating conditions under which your Sheet Lead is operating, we would be pleased to go into the matter fully and will convince you of the economy of Hoyts Sheet Metal.

WRITE FOR CATALOGUE.

HOYT METAL COMPANY

FACTORIES: London, England. Toronto, Canada. St. Louis, Mo. New York, N. Y.

GLUES

of all Grades for
Cores, Wrappers, Sizing, or
Other Paper Makers' Purposes
Samples and quotations on request.

Canada Glue Co., Limited
BRANTFORD, ONT.

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16 Wellington St. E.
TORONTO, ONT.



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Park Row Building,
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Importers and Exporters
Foreign and Domestic Woodpulp

SULPHITE PULP

Packed for Export

We have our own offices in the United Kingdom and in the Far East, and would be pleased to hear from Canadian mills requiring an efficient Export connection.

A. G. De Sherbinin & Co.
60 BROADWAY
NEW YORK

CAUSTIC SODA AND BLEACHING POWDER

WINDSOR BRAND

Manufactured by:---

CANADIAN SALT COMPANY LIMITED
Windsor, - - - Ont.

Selling Agents:---

Nichols Chemical Co., Ltd.
Montreal, Que. and Toronto, Ont.

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the SAFEST and BEST material for

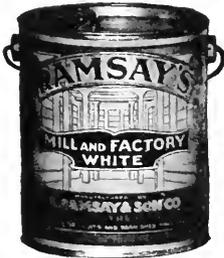
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Panzl Linings are Safest and Most Durable

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is the action of light to increase
production and efficiency.

RAMSAY'S

Mill and Factory White

*on the walls and ceilings of
your plant will produce efficiency
and improve sanitary conditions.*

WRITE US

A. RAMSAY & SON COMPANY

Makers of Paints and Varnishes since 1842

TORONTO

MONTREAL

VANCOUVER

York, No. 1 repacked white rags are available at \$5.50 to \$5.75 New York, while street soiled whites are quotable at \$3.00. Roofing rags are in a dormant position owing to the refusal of mills to buy. Felt manufacturers evidently are still wanting for business, and are intentionally remaining out of the rag market until activity in their own line justifies their purchasing larger supplies of raw material.

PAPER STOCK. A fairly good business has been transacted this week in the low grades of old papers. News and mixed paper have moved in larger volume than for some time, and prices have risen slightly. Demand for kraft paper also has been better, while a ready market has existed for books and magazines within certain price bounds. High-grade material, such as shavings, has, on the other hand, been noticeably neglected by commerce. This is possibly due to the pulp situation, and the fact that manufacturers have been able to get all the pulp wanted at prices more in their favor than waste paper stock. Flat folded news of No. 1 grade has sold to mills at 65 cents per hundred pounds f.o.b. New York, with some purchases reported at a shade under this level. No. 1 mixed paper has freely commanded 50 cents New York, and reports have been heard, though not confirmed, of some mills granting better prices. No. 1 kraft has sold at 2.25 cents a pound at the point of shipment, while heavy books and magazines have fetched 1.35 to 1.40 cents in sales to consumers. Shavings are largely nominal in price. Dealers quote in the neighborhood of 4.50 to 4.75 cents f.o.b. New York for No. 1 hard whites, and around 3.75 cents for soft white shavings of No. 1 quality, but indications are supplies can be secured at cheaper figures.

BAGGING AND ROPE.—With arrivals of foreign rope on the increase, the demand for domestic material has eased off to an extent, and prices as a result are quotably lower. Offerings of strictly No. 1 domestic manila rope have been made to mills at 4.25 cents a pound New York, although it must be said most sellers are asking higher prices. Scrap bagging is little sought, and quotations remain at about previous levels. Demand from one or two sources has improved slightly, but the movement at large is of light volume, and No. 1 packing is available at 2.25 to 2.50 cents a pound f.o.b. New York.

The Laurentide and Riordon Paper Companies have co-operated in buying 1,500,000 spruce trees to plant the coming spring, in addition to those from their nurseries. Each will plant about a million trees.

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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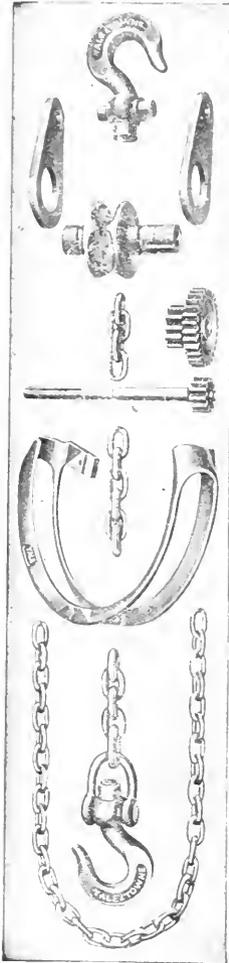
No. 16

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EDITORIAL

THE PULPWOOD EMBARGO AGAIN.

In the annual statement of the International Paper Company, President Dodge makes a rather vigorous attack on the policy of Quebec and Ontario for putting an embargo on the export of unmanufactured pulpwood. It is stated that when U. S. manufacturers leased certain Crown Lands in 1890 there were no restrictions and wood was freely shipped until 1910, when the embargo was laid on. Figures are given to show the enormous growth in the newsprint industry in Canada since the regulation took effect, an increase of from 161,000 to 738,000 tons in production and 2,600 per cent in sales to the United States. In the meantime, the production of newsprint was less in the U. S. in 1918 than in 1910. This is due to the diversion of more machines to other grades than were installed for newsprint production.

The point is raised that the Americans have been forced to move their paper mills over into Canada. We are unable to discover other than the Fort Frances mill in Ontario and the Brown Corporation plant at La Tuque, Quebec, which have been established in these provinces since 1910 by American concerns with mills in the States. The former makes newsprint and the latter, sulphate pulp. We have grave doubts that the attitude and action of the Provincial governments had any serious effect. Some other factors deserve important consideration. Several mills have been built in British Columbia by American capital, but they each have a different story.

One of the pleas of the American holders of Canadian limits is that they have title to 32,000,000 cords of wood, practically in perpetuity, and that they would be satisfied to take for export merely the annual growth, 1,280,000 cords. The argument is advanced that if this supply were assured from Canada the price now paid by American publishers for both home and foreign newsprint paper would fall.

The first point in this paragraph to dispose of is the argument about the price of paper. It is a very strange thing to see an American newsprint manufacturer endeavoring to reduce the price of newsprint to the publisher in this manner. Why should the unrestricted importation of Canadian wood affect the cost of production of a mill with a local supply? The answer seems to be that this is but a ruse to get the wood mentioned in the first sentence of the preceding paragraph.

And why do the American mills want this wood so urgently? Because they have wasted their own

heritage and now turn hungry eyes on the green beauties of the north. They slaughtered and burned their own great forests and cut the hillsides so bare that the rains and melting snows washed the rocks clean of productive soil. To avoid this kind of exploitation of the Canadian forest is one of the great ends accomplished by the embargo. Suppose it were permitted to cut and export the assumed annual growth, what would happen? One guess may be as good as another, but ours is that the easily accessible timber along the rivers would be hacked out to the extent of the annual growth, or more, with a temporary drop in wood costs to a few mills. This would not seriously affect the price of paper because other mills would be operating under constantly increasing wood costs and would only result in greater profit to the mills concerned. The Pulp and Paper Magazine is delighted with the prosperity of every paper mill on the continent, and hopes it will continue, but that is different from the privileges asked.

The removal of duty on Canadian newsprint is quite as much a factor in the situation as the pulpwood embargo and is of the publishers' own making. If that is indirectly causing an increase in price by encouraging more mills on this side, let them agitate for a new tariff. That would give the American mills a bigger margin of profit, but would hardly encourage the building of newsprint mills. Canada is the place for the industry, and it only requires more intelligent regulation of the cutting and care of the forest by Canadian mills to assume its permanence.

If American mills want Canadian wood they can buy it from settlers, cut from freehold lands or build mills in Canada. Of course, the last is preferred, as a good American usually makes a good Canadian.

The patents of Hermann Frasch, which revolutionized the mining of sulphur and established the United States as the world's leader in its production have been declared free for the world to use. There are enormous deposits in the Gulf States, but they are hardly inexhaustible. It is to be hoped that the removal of this restriction will not be followed by indiscriminate exploitation and wastage. Here is a fine place to institute government regulation of the mining of a most important natural resource. Coming generations will need sulphur and wasteless utilization is necessary.

A GOOD MAN FOR THE PLACE.

On the Industrial Relations Commission which has recently been formed for the purpose of looking into the industrial relations that are likely to become strained and to encourage adjustment before the breaking point is reached, includes one of the most honored members of the Pulp and Paper Industry, Mr. Carl Riordon. He is associated on the Commission with Chief Justice Mathers, as chairman; Senator White, President of the Montreal Gazette Publishing Company, Mr. Charles Harrison, M.P., who has been head of the order of railway conductors on Eastern lines of the C. P. R., both of whom represent the public; Mr. T. Pauze, lumberman, of Montreal, who with Mr. Riordon represents employers; Tom Moore, Pres. of the Trades and Labor Congress, and J. W. Bruce, Member of the Labor Appeal Board, Toronto, who will represent employees and Thos. Beugough, Toronto, Secretary of the Commission.

Mr. Riordon has long been known as one who takes the deepest interest in the welfare of his employees, with whom he has deep sympathy, and of whose problems he has a lively appreciation. He is a big-hearted, hard-working employer, who realizes the advantage of satisfactory relations between the workman and his employer, and does not represent the so-called capitalist.

The Riordon Company was established in 1857, and has had a fine record as a progressive concern. The company now operates large pulp mills at Merriton and Hawkesbury, Ont., and is erecting a fine new mill with a model town at Temiskaming, Que. If the other men on the Commission have the wideness of vision and largeness of heart that characterises Mr. Riordon, we can confidently anticipate some excellent results from the appointment of this Commission. They have a big work to do, and work which is urgently needed just at this time, perhaps more so than at any previous time in the history of Canadian Industry. The Commission having to do with employment and the relations of railway workers to the railways has filled a want in that field and the present Commission, which appears to have been conceived by Senator Gideon Robertson, should fill a similar want in the general industrial field.

Mr. Tom Moore has shown himself an admirable leader and champion of the working man. He has shown a wide vision and an appreciation of the many factors which must be taken into consideration when judging such an intricate problem as industrial relations. The moderation of Mr. Moore taken together with his high ideals and earnest desire to improve the conditions of labor, and at the same time maintain business enterprise in a profitable condition, is worthy of emulation by some of the more radical "doctors" of industrial affairs.

The Commission has a big job, and a rather limited time has been set for covering a large field, but

it is made up of men of great energy, and we have no reason to doubt that the result of their investigations will be of the greatest value to Canadian Industry. It is understood that they start out for the far West next Tuesday. The mining industry is not represented on the Commission, a fact that would seem to increase the responsibility of the present members. No doubt they will be well advised, however.

Good progress is being made in lining up pulp and paper mills to co-operate with the Universities by taking students to work for the summer. A fine work that deserves success.

A correspondent of the Financial Post, asks that paper when, and in what amount, Dominion of Canada \$5.00 bills were issued. Our contemporary states that the amount issued in 1913 was \$6,154,047. How do you count \$47 in \$5 bills, "F. P.?"

An editorial in Paper calls attention to the great increase in advertising in the United States, and comments on the peculiar appropriateness of a vigorous campaign at this time. War times and troubles have broken many business connections, and advertising is the best means to re-establish former relations and get regular business back on the rails.

The school to be built at Kalamazoo by the Vegetable Parchment Co., and the Western Paper Makers' Chemical Co., will be watched with great interest. There will be a children's playground, public recreation centre and special classes in keeping with the interests of the community. The cost of the building is estimated at \$10,000. Who can place a figure on the returns to the children of Parchment?

Through the courtesy of A. L. Dawe, secretary of the Canadian Pulp and Paper Association, we are able to reproduce on the cover of this issue, a copy of the memorial to the patriots of the industry who gave their lives in the cause of liberty. The memorial was unveiled at the annual meeting of the Association in Montreal in January, where it was a feature of the decorations of the banquet hall.

FOREST WASTE.

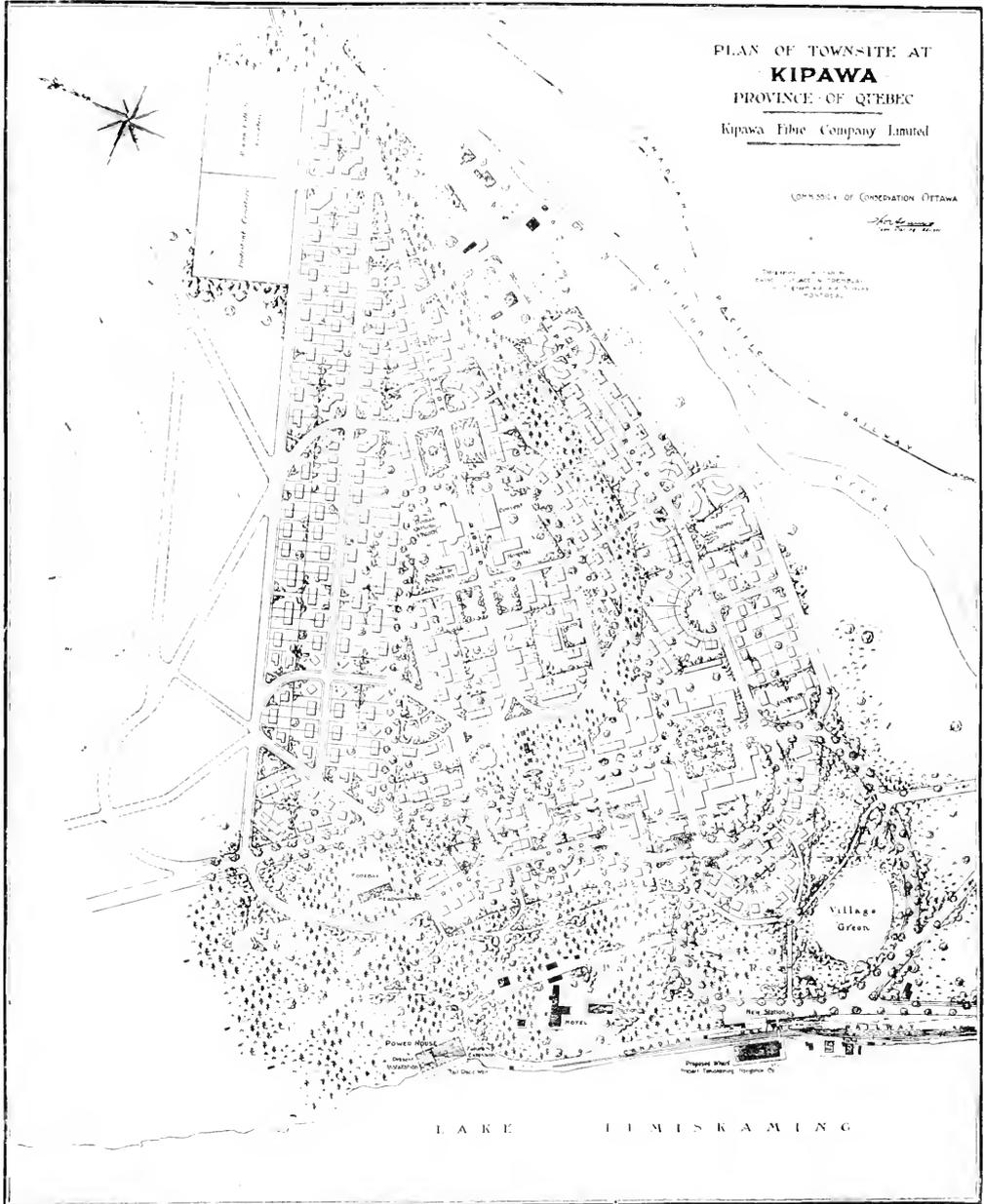
We have used up about half the forests we originally possessed. Although there are forest forming associations in nearly every state, supplementing the excellent work of the national forest service, trees are being used up faster than they are being grown. When a tree is cut less than half of it reaches the consumer. The sawmill wastes amount to 49 per cent of the tree. Forest fires cause a loss of \$25,000,000 to \$50,000,000 yearly. There are 147 national forests in the United States, consisting of 155,166,679 acres.—Thrift Magazine.

The weather is so changeable of late, we are inclined to refer to it as "she."

Model Townsite of Kipawa Fibre Company

Kipawa, P.Q., has been adopted as the site for a model community by the Riordon Pulp & Paper Co., in connection with their new mill for the production of pulp. The location at Kipawa has apparently

been selected because of the proximity of timber limits and water powers derived from Kipawa Lake. For the purpose of promoting the mill and town, the company has brought under control a compact area



of about ten square miles, which is to be developed into a model townsite with the consent and approval of the Quebec Government, and the co-operation of the Commission of Conservation, through its town planning adviser, Mr. Thomas Adams.

The accompanying plan of the proposed development, provided through the courtesy of the Commission of Conservation, illustrates the site overlooking Lake Temiskaming, which is part of the Ottawa River. The site of the mill is to be south of the town on the opposite side of Gordon Creek, the stream by which the waters of Kipawa Lake drain into Lake Temiskaming.

Choice of Ground Limited.

The choice of a suitable townsite was rendered very limited by the fact that a mill location had been selected to take up nearly all the available level land. Furthermore, physical features, such as Lake Temiskaming, Gordon Creek and the tracks of the C.P.R., were governing factors to be taken into consideration. In addition, at a point to the east of the area shown on the map, there was an existing mill and village, known as Lumsden's Mills, on which the whole level land was taken up by lumber yards.

The only available land for a town, therefore, was hilly ground to the north and south of the mill site overlooking the lake and river, considerable portions of this land being covered with huge boulders, and timber or shrub of various sizes and densities. After a thorough investigation, the location north of the mill site was selected and although apparently a steep hill, was found on inspection to embrace considerable fairly level areas, which might be developed to provide easy grades and economical arrangement of lots if a proper plan were adopted.

As a first step toward preparing such a plan, a topographical survey was carried out by Messrs. Ewing, Lovelace and Tremblay, of Montreal. While this survey was being carried out, a preliminary sketch plan was prepared. After a consideration of several alternatives, the main lines of the plan illustrated herewith were determined on and surveyors were instructed to locate the roads on the ground. For this purpose, paths had to be blazed through the forest and the plotting carried out under peculiar difficulties, a large part of the work being performed in the heart of winter.

Water Conduit Introduces Difficulties.

Considerable care had to be taken to select sites for the churches and other public institutions. Other existing features which had an influence on the plan were the position of the station and the existence of a good hotel overlooking the lake, situated in what can be made a beautiful park. A factor which introduced considerable difficulty was the intention of constructing a water conduit, which is shown to intersect the whole town, for which provision had to be made in carrying out the plan. The only approaches between the small areas of the town on the south of the conduit and the larger area on the north, were to be obtained by bridges over the conduit, which is above ground and 8 ft. in diameter. The grades of the streets, therefore, had to be determined not only with due regard to the contours of the land, but also in relation to the artificial obstruction created by the conduit.

The final arrangement is illustrated and shows the main approach from the station by two curved roads leading to the central square in different directions.

The character of the ground made more direct approach impossible. The central square location was the only level area of any size suitable for the purpose after leaving the low level occupied by the village green. From the central square, there is a main avenue running parallel with the lake and following an easy grade.

Less Than Five Per Cent Grades.

Notwithstanding the steepness of the ground, the contours ranging from 650 to 1,000 ft., the grades of most of the streets are less than 5 per cent. Had the land been laid out in the usual rectangular form, the grades, in some cases, would have amounted to 18 per cent.

The suggestions on the plan show mostly semi-detached houses, with a few individual houses and some groups of three to six of the smaller types. Care has been taken to give the residences a good aspect, with ample air space and open surroundings for each house. Messrs. Ross & McDonald, of Montreal, have been entrusted with the design of the houses, the first of which have been erected. It is expected that a large number will be constructed shortly and that the mill will be completed and in operation. The architects are permitted to use their discretion with regard to the grouping, sizes and location of the houses, but will adhere to the plan so far as the location of streets is concerned, and will not diverge from the determined arrangement of public buildings.

After the plans had been prepared, consideration was given to the problem of water supply and drainage, and after consultation with Messrs. R. S. and W. S. Lea, Montreal, it was found that no readjustment of the plan was necessary to enable an economical system to be designed.

A town manager and engineer has been appointed to assist in the promotion and development of this townsite as a model community.—Contract Record.

BAYLESS ASSISTS AUSTIN IMPROVEMENTS.

Between the Bayless Corporation and the Austin people who have bent their energies toward a better and bigger Austin, the town now has all the improvements of any large town. Two excellent churches, both grade and high schools, also a hospital that is as well equipped as any for many miles around.

Now they are to erect a Community Club costing \$70,000. This is made possible through the encouragement of the Bayless Corporation, who will make a donation of one-half the cost of the Club, the other half to be made up by the employees and townspeople. Further than this the Bayless Corporation have agreed to pay 5 per cent dividend on all outstanding stock. The outside dimensions of the Club will be approximately 100 by 200 feet, and it will contain a theatre, pool and billiard room, swimming pool, dance hall, restaurant, club rooms for ladies and men, class rooms for the children and everything that should be in an up-to-date club including a library and reading room.

The grounds will comprise tennis courts, croquet grounds, sand piles, swings, etc., to furnish amusements for all ages. The Bayless Corporation are doing this to enable their townspeople and employees to make one more step towards the enjoyments of a larger town and to furnish them with the highest quality of entertainment and amusement.

Probe Postponed to May 5th.

The intimation that Governmental control of the Canadian paper industry would automatically cease with the signing of the peace treaty, the exclusion of the December-January costs, the report that the newspaper publishers had entered formal appeal against the last order of the Paper Controller in extending the \$69 price to June 1st, together with the rejoining of the newspaper publishers as parties to the Canadian newsprint inquiry, were the big features of the "probe," which continued in session at Ottawa Wednesday, Thursday and Thursday night last week.

On the whole it is hard to say just who had the better of the two day sitting. The publishers, who practically held the floor, brought out various points in their examination and cross-examination of Mr. W. D. Taylor, Mr. Clarkson's assistant, in support of their previously outlined cases, which were more fully gone into during the hearing of the appeals before the Paper Control Tribunal last January. The manufacturers were just about to start their cross-examination when the session came to an abrupt halt and postponement made to May 5.

A feature of the inquiry was the information that wood costs are not yet going down, and in fact, so the correspondent is given to understand by a Government official, more likely to go higher (with the exception of Fort Frances) for some months to come. The increased cost over all as given in the estimate will range from one dollar per cord upwards. The wood used by J. R. Booth and now going into his costs is around \$20 per cord. This is the high water mark, and the value this company places on the cost of wood for this year's operations.

A very interesting and perhaps finally important reference as to the manufacturing conditions was made on Thursday afternoon in connection with the consideration of the Donnacona Company when the Controller Mr. Robert A. Pringle, K.C., said that the September costs showed an increase of ten dollars over July, and the December-January costs had showed an additional increase of ten dollars over September. A twenty dollars increase it seemed.

The end of the probe is not yet, for the inquiry was adjourned until May 5th, and with the exclusion of the December-January costs it is altogether probable that a still further session will have to be called and after all this (if it stops there) is wound up. There are the appeals before the Judges of the Paper Control Tribunal that have to be taken into consideration.

The efforts made on behalf of the newspapers was to substantiate or make evidence to back up their contention regarding the certain reductions which they claimed should be made, rather than an attempt at disproving or offsetting the advance of \$8 per ton which was made by Mr. Pringle. The extent of these deduction summed up from a publisher's standpoint might run all the way from \$14 downwards. It will be left for the Controller and the Judges of the Control Tribunal to decide. Meanwhile the \$69 price continues.

During the inquiry it developed that John R. Booth, Jackson C. Booth and Fred Booth, together draw \$90,000 in salaries each year, half of which is chargeable to the newsprint end.

The latest principal costs and figures as contained in the October-November reports which were filed but not read, showed for five of the six mills, Donnacona, Fort Frances, Price Bros., Laurentide, and John R.

Booth (the exception being Spanish River), that the average manufacturing costs, exclusive of return on capital invested, were for October \$49.22, and November \$52.82.

The figures of the new reports on groundwood, sulphite and newsprint as furnished the writer were as follows, and will be interesting as reflected in current prices for pulp and paper:

Groundwood.

Mill.	October.	November.
Laurentide	\$19.58	\$17.67
Price Bros.	20.82	20.39
Fort Frances	20.14	20.11
John R. Booth	20.55	25.92
Donnacona	21.06	23.80

Sulphite.

Mill.	October.	November.
Laurentide	\$42.32	\$42.68
Price Bros.	43.59	43.30
Fort Frances	*(none)	*(none)
J. R. Booth	53.56	59.64
Donnacona	59.20	62.33

*Do not manufacture sulphite.

Newsprint.

Mill.	October.	November.
Laurentide	\$51.59	\$46.74
Price Bros.	45.86	46.43
Fort Frances	51.37	55.63
J. R. Booth	** (none)	** (none)
Donnacona	50.29	53.33

**Strike situation. Lower production in October-November.

Counsel in attendance were: Mr. W. N. Tilley, K.C. and Mr. A. J. Thompson, representing the newspaper Committee of the Canadian Press Association, Mr. George H. Montgomery, K.C., newsprint section Canadian Pulp and Paper Association, George F. Henderson, K.C., John R. Booth, John F. Orde, K.C., E. B. Eddy Company, Senator Ross, K.C., Fort Frances Pulp and Paper Company, and Mr. M. C. Martin, representing the Chicago Tribune, and the Ontario Paper Company.

A summarized report of the proceedings is as follows:

Mr. Pringle ruled out the evidence of W. J. Hagenah as to the valuation of the John R. Booth plant, and intimated that the Control Tribunal simply wanted to get at the correctness of figures on which the \$69 price was based.

All the Judges want to know is whether these estimates which have been put in from time to time are backed by facts.

Mr. Montgomery said the manufacturers were not afraid to have their estimates tested, and referred to evidence which had been given by Mr. P. B. Wilson, of the Spanish River Mills, and by Mr. F. A. Sabbath, of Laurentide.

Mr. Taylor explained that it would be possible for the cost of materials to increase and be placed in stores, but not at the same time immediately enter into and be reflected in the costs of manufacture.

Near the close of the Wednesday morning session the Controller said it had been communicated to him that the whole newsprint matter would terminate immediately with the signing of peace, and that then the control of the paper industry would go by the

board. He gave it as being his opinion that a final decision be arrived at as soon as possible.

Mr. Pringle decided not to allow the December-January costs to be included in the discussion.

The reports of the official auditor were put in and filed, and were not read. Many of the deductions contained in the reports, it was stated, had been checked over by Price Waterhouse and Company, and that though the principle of auditing was still a question of conflict between publishers and manufacturers, they appeared to be otherwise agreed to the deductions if the principle was admitted.

Mr. Tilley introduced comparative figures as to the adding of the eight dollars per ton for increased costs to the Laurentide mill previous to last September. He claimed that in every instance except October they showed a price much below that used by Mr. Pringle in fixing his price in September. Regarding October and the influenza, Mr. Tilley said the costs should not be taken into account for price fixing, as such a contingency, like strikes, were among the natural hazards of the industry.

Mr. Montgomery attempted to have the December-January costs introduced, saying that the higher costs in October and November might not have been so largely due to the influenza epidemic, as to the normal increases in expense, and that the only way to ascertain the exact amount would be to include the December-January costs and see where the curve of increase would fall. The request was not granted.

Mr. Clarkson said: "We have adopted principles and policies and they (the newspapers) have asked for certain deductions from them. I understand the appeal tribunal asks us to go over the figures. We have done so, and so have the accountants for the newspapers and the manufacturers."

Mr. Pringle said the situation seemed to be that it now rested with the Judges and himself to further go over the reports if they cared to do so. To this suggestion Mr. Clarkson replied "Exactly."

Mr. Henderson complained as to Mr. Taylor filing reports, which he claimed, he had never had an opportunity of seeing. Such a report was the July-October report sent out by Mr. Clarkson and afterward recalled. "Is it right to spring these at the last moment? I have known of the existence of one of them for some time, and have vainly written three times to get it."

Mr. Pringle said he remembered the document in question, and that it had been sent to him and recalled, it was the same with the manufacturers, and he wanted to know why the publishers had not also returned the report when Mr. Clarkson had requested them to do so.

Mr. Clarkson explained that Mr. Imrie, manager of the Canadian Press Association had been asked for it and had refused to give it up.

Mr. Pringle finally ruled that the documents to be put in, in this connection, must be such that the Government's auditor took responsibility for it.

The presentation of the auditor's reports, together with various explanations regarding some of them was the principal matter taken up at the Thursday morning session of the inquiry.

One of the principal points raised by the newspapers was the inclusion of such charges as patriotic fund, grants, etc., as cost charges, instead of paying them out of profits. Mr. Clarkson's reports indicated that the deductions made as asked for by the

newspapers were right if it be finally decided that such items should be eliminated from costs. The defence of the manufacturers was pretty much along the lines of that advanced before the Paper Control Tribunal, when it was broadly argued that such grants were general business expenses, and were properly chargeable as had been done.

In the report on the John R. Booth mill the auditor seems to lean toward acceptance of the contention that the Controller was wrong in adopting a principle of averaging for the purposes of price fixation. The effect, according to the report, would be about 29 cents per ton reduction. In reference to the wood costs the report says: "If it should be held that all wood used during 1918 should be averaged the deduction to be made would be \$4.39 per ton of newsprint for the six months."

The allocations of commissions on American sales and the inclusion of wrappers in the weight of the newsprint production at the Booth plant is also referred to in the Clarkson report.

Speaking on the contention of the newspaper publishers regarding the so-called diversion of power from the Canadian to the American side by the Fort Frances Company, Mr. Taylor agreed with the view that if Canadian power had been taken on a fifty-fifty basis there would have been a reduction in mill costs on the Canadian side.

The hearing and evidence of Sir William Price was the big feature of the inquiry on Thursday afternoon. Mr. Tilley went to some length in questioning on certain expenditures on river improvements and dams. The amount expended ranged around \$226,000.

Mr. Tilley went on to argue that the money spent on river improvements in 1917 as well as in 1918 had helped to decrease the cost of this year's drive. Sir William did not altogether accept or agree with this view. He explained that if there had been no such expenditure in 1918, that what was left in the river in way of improvements after many had been destroyed would not have enabled the drive to get down. In one instance he recited how one series of new wing dams had been swept away. At another stage he said the amount of saving on a drive largely depended whether the spring was a good or a bad one for it. Monies spent on roads were also mentioned.

Questioned as to how much he thought would be spent on the rivers this year, Sir William said that the amount would be around \$100,000, part of which would be spent on opening up a new river.

Sir William told how the operations of the M.S.A. worked out, how mill hands had decamped and that on the whole the mill had become inefficient. He also stated that woods costs were even higher this year than last.

The Controller commented that he thought they were coming down. Sir William said they were coming down a little in the bush, but that the men in the mills were asking higher prices. He did not think that any lessened cost would be reflected in the mills for quite a while. "Wood costs are higher by quite a bit, and coal is lower, but we will not be using our new coal until September," said Sir William.

At the close of the session on Thursday night it was found that a convenient date for continuing the inquiry would not be until May 5. There is some possibility of the advent of Peace by that time, and the end of the probe business.

Soda Pulp Manufacture

By E. SUTERMEISTER,
S. D. Warren Co., Westbrook, Me.

PART VIII.

(Concluded from Page 354.)

In Part I, Mr. Sutermeister discussed the preparation and composition of cooking liquor and the apparatus and materials employed, with illustrations; in Part II, the recovery of lime, with analyses; the principles and practices of cooking operations, with curves; in Part III, mill practices, with data relating to woods employed; modified processes; and by-products of cooking; in Part IV, digesters, with diagrams; circulation and steam consumption; comparison of rotary and stationary digesters; in Part V, discharging or blowing digesters; washing the pulp, with analyses of black liquor, and illustrations of apparatus; in Part VI, recovery of soda; evaporating systems, with illustrations; in Part VII, the black ash furnace, with illustrations; losses in recovery; leaching systems; black ash waste, with analyses.

(This paper will be reprinted in pamphlet form, with stiff cover, and will soon be available. The price will be 50 cents each, or three copies for \$1.00.—Ed.)

Treatment of Fibres.

The fibre from the wash pits, when it is judged to be sufficiently washed, is discharged through a large pipe or sluice-way into a stock tank. The wash pits are often arranged with a water pipe fixed in such a position that it supplies water under high pressure to the fibre in the immediate neighborhood of the stock pipe. When the latter is open the rush of water through this pipe loosens up the fibre and dilutes it sufficiently so that it will flow rapidly to the stock tank. At the same time a stream of water under high pressure is directed onto the stock from above to loosen it up and wash it down to the stock pipe. The time required for this operation will be two to three hours for a pit holding nine tons of fibre; it will necessarily vary with the amount of fibre in the pit, the distance to the stock chest, the size of the stock pipe, the water pressure, etc.

The stock chest into which the fibre passes from the wash pits is placed below the latter so that they may be emptied by gravity. It should be sufficiently large to hold a considerable supply of fibre so that a delay in completing the washing of any pit of stock may not cause the rest of the plant to be idle. It is desirable to have it fitted with an agitator of some sort, which, however, needs to move only fast enough to keep the fibre from settling permanently at any point, for if this takes place the fibre is likely to rot and turn black. The concentration of the fibre in the stock chest depends on the care used by the men in emptying the wash pits, but even when the minimum amount of water is used it probably seldom exceeds 2 per cent of total dry matter.

Knotters.

From the stock chest the fibre is pumped to some form of knotter. In preparing the chips no attempt is made to remove knots, and when chip screens are not used there are also present large slivers and sometimes chunks of wood from the ends of the logs. These are not thoroughly penetrated by the cooking liquor and so appear in the stock as hard, dark brown

masses, and it is the duty of the knotters to remove them.

Knotters of various designs are on the market, and in a good many mills home made devices are used. The principle of all such apparatus is the same—to bring the diluted stock into contact with perforated or slotted plates which will retain the knots and coarse pieces while allowing the finer material to pass through. The perforations are large enough for shives and many small slivers to pass through, so that the stock is not yet sufficiently free from them to be ready for further treatment. The knotters do, however, relieve the screens of much work, so that their capacity is greatly increased.

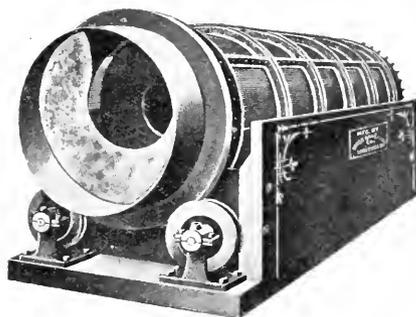


Fig. 26.—Worm Knotter. (Courtesy of the Baker Mfg. Co.)

Figure 26 shows a general view, from the outlet end, of a worm knotter which is much used in the manufacture of sulphite fibre, and is also capable of doing good work on soda fibre when plates with the proper perforations are employed. The diluted stock enters at the opposite end to that shown, and is carried through the cylinder by a worm inside, which causes it to travel about fifty feet before discharging. The good fibre passes through the perforations into the vat, from which it is removed to the screens, while the knots are discharged from the projecting ring at the end. This machine requires very little power, and is capable of handling a large amount of stock.

Another type of knotter is shown in general view in Fig. 27. Within the outer casing is a shaft on which is mounted a perforated sheet metal drum. This is hexagonal in section, and is in two parts, one of which is of considerably greater diameter than the other. The stock to be treated flows in a continuous stream, through an opening around the shaft, into the larger portion of the perforated drum, and as the latter turns it is dashed round vigorously enough to cause all but the knots and uncooked chips to pass through into the outer casing, from which it goes to the screens. The knots and coarse, undercooked pieces are discharged at the end opposite the inlet onto

a conveyor or into any suitable container. A shower pipe fixed above the drum assists in keeping the plates clean.

A simple home-made contrivance to do this work may be constructed by mounting a trough with a perforated bottom over a good sized tank, and fitting it with a scraper conveyor to remove the knots. The trough should be given a fairly steep pitch and the stock should enter through a gate or head box at the lowest part. In order to get a good separation of

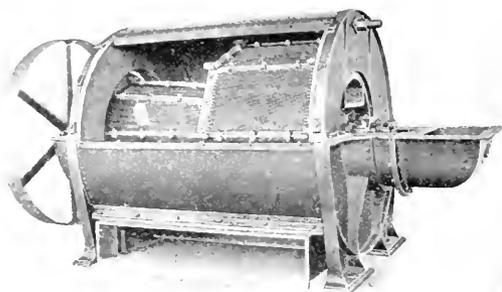


Fig. 27.—Horizontal Rotary Screen. (Courtesy Sherbrooke Machinery Co.)

fibre and knots spray pipes should be so placed that as the knots are removed by the scraper they are given a thorough washing before being removed from the perforated plates.

Any of these knotters will do satisfactory work when the stock supplied is of the proper density—which depends on the type of machine—but if too little water is used the fibre cannot pass through the perforations, and considerable of it is apt to be lost with the knots. The home-made apparatus just described is probably less subject to such losses than most commercial machines, because the knots are washed before they are discharged.

The coarse material removed by the knotters contains much perfectly good fibrous raw material, and as it has already been partially cooked it is in even better condition than the original chips. If the chipper and crusher are in such condition that many knots are present it is well to collect them as they are discharged from the knotter and return them to the digester to be recooked with the next lot of chips.

Screens.

After leaving the knotters the next step in the preparation of the fibre is to screen it, the object being to remove as many as possible of the small shives (imperfectly cooked bits of wood which were not large enough to be taken out by the knotter, but which are too large and contain too much incrusting matter to bleach well. The screens used for this purpose are of several different types, the most common of which are flat diaphragm screens and rotary screens.

The diaphragm screen is shown in perspective in Fig. 28. It consists essentially of an upper, heavy, wooden vat in the bottom of which are fixed brass or bronze plates with very narrow slots, .010 to .012 inch wide. This vat is elamped firmly to a base in which are fixed heavy rubber diaphragms. These are given a slight up and down motion by means of cams at-

tached to the shaft, which act on the diaphragms through pitmans. In operation the stock flows into the vat and is continuously discharged through an opening connected with the space between the plates and the diaphragm. As this space is entirely filled with water in which the fibre is suspended the motion of the diaphragm causes it to surge up and down through the slots of the screen plate, keeping the latter clear and in condition to allow the passage of the fibre. The outflowing screened stock is controlled by a gate which permits the depth of stock in the vat to be regulated; this in turn influences the rate at which the stock screens.

When using this kind of screen for soda pulp the dirt and shives settle on the plates and tend to work through the slots more than is desirable. This can be avoided to some extent by arranging a scraper conveyor to remove the shives and dirt continuously from the surface of the plates or the screens can be set up in series as is done with sulphite; the last of the screens in this case would produce dirtier fibre than the first. Even under the best operating conditions the flat screens cannot be considered as good for soda fibre as the centrifugal screens.

One type of centrifugal screen is vertical. Within the outer casing there is a partition formed of screen plates of cold rolled perforated copper. The lower flange of this partition is bolted to the edge of a divided trough in the bottom of the casing and this trough is provided with two outlets, one connecting with the space inside the screen plates, and one with the space between the screen plates and casing. The stock enters this screen at the top and is distributed by centrifugal wheels, which are provided with central chambers around the hub and ports leading from these chambers to the arms. The centrifugal motion which these wheels impart to the pulp, together with the air current created by them, carries the stock against the wall of screen plates with sufficient force to cause the desirable material to pass through the perforations while the coarse material and dirt drop down on the inside. The two portions, good fibre and screenings then pass out by the two separate openings already mentioned.

This screen requires only about 15 h.p. when oper-

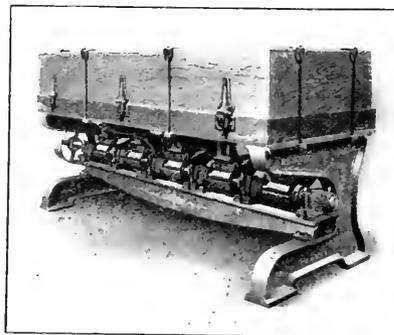


Fig. 28.—Side-opening Diaphragm Screen (Courtesy Waterous Engine Works.)

ating at its maximum capacity, which is about 25-30 tons of soda pulp in twenty-four hours. The floor space occupied is very much less than for flat screens of an equal capacity, and very little attention is required. The screen is very durable, as no wood, rubber, or other short life material is used in its con-

struction, and cases are on record where the screen plates have been in use for three years, and were even then in good condition.

Figures 29 and 29a show two views of a horizontal type centrifugal screen. The principle is the same as in the vertical. The stock enters the funnel shown at the left of Fig. 29; the screenings are dis-

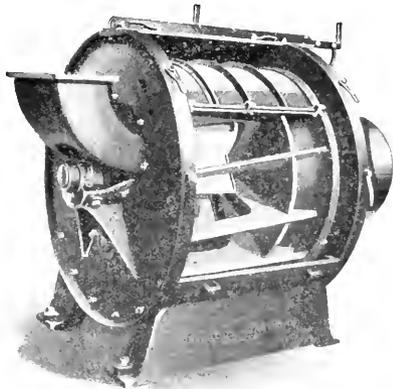


Fig. 29.—"Quiller" screen, showing pulp inlet. Removal of part of casing and of screen shows vanes which distribute pulp and impart momentum to carry it through the screen.—(Courtesy Waterous Engine Works.)

charged from the spout at the right of Fig. 29a, and the screened pulp is delivered through the large opening extending along the bottom of the screen.

Sand Settlers.

After screening the fibre is usually put through some form of sand settler or riffler in order to remove fine dirt, sand, cinders, etc., which have proved too fine to be taken out by the screens, but which would be detrimental to the finished product. These sand settlers are usually built in the form of long,

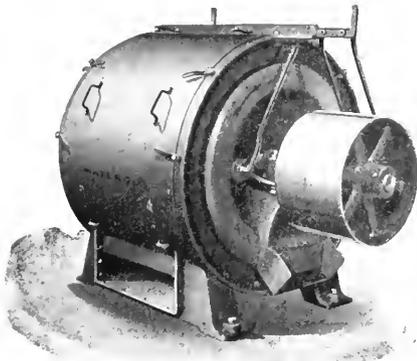


Fig. 29a.—"Quiller" screen, showing screenings discharge (under pulley), and pulp delivery outlet.—(Courtesy Waterous Engine Works.)

low troughs in the bottom of which there is placed some coarse material such as cocoa matting, to assist in retaining the dirt which settles out. A photograph of such a sand settler is shown in Fig. 30.

The pitch of these troughs is very slight, so that the velocity of flow is comparatively low, and at intervals strips of board are fixed across

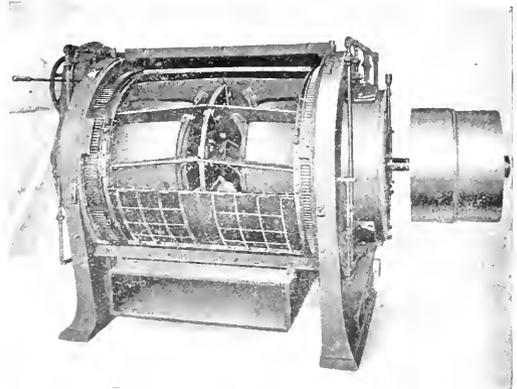


Fig. 26b.—Horizontal centrifugal screen. Stock is fed to the centre.—(Courtesy Sherbrooke Machinery Co.)

the trough to still further check the flow and give a better opportunity for the dirt to settle. As these boards maintain a greater depth of stock at the entering end than at the discharge end it is obvious that the velocity increases as the stock passes through the riffler. It is best to have the sand settler all on the same level, though if space is not available it may be divided into several troughs placed one over the other. In this case the flow from one trough to the next below causes violent agitation and currents which interfere with the satisfactory settling of the dirt. Regardless of the structural details of the settler the principle on which it operates is that of passing the stock, mixed with a large volume of water, through it at such a rate that the dirt will settle while the fibre is carried along in suspension. This involves a careful adjustment of the proportion of stock to water and of the rate of flow, for if there is too little water or the rate of flow is too great the dirt cannot settle, while on the other hand, if the flow is not fast enough the fibre will settle out with the dirt and nothing will be accomplished.

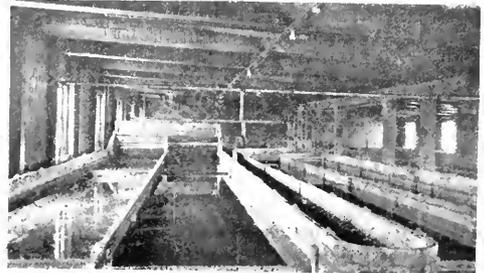


Fig. 30.—Sand Settlers.

The average pulp mill riffler is probably constructed to fit the space available rather than because of definite knowledge that certain conditions must be fulfilled. In fact there is a great lack of satisfactory information on the subject, and it is not possible to state just what should be the rate of flow or the area or volume of the riffler per ton of fibre. Because of this ignorance it is frequently the case that the product of a mill is increased by the addition of new digesters, or in other ways, without at the same time enlarging the sand settler, the result being that fibre passes through it too rapidly for efficient separation of the dirt. There is good opportunity for improvement in the design of this apparatus, and a thorough study of the problem would probably prove very beneficial.

Concentrators.

All of these processes through which the fibre is put after leaving the wash pits require that it be banded in a highly diluted condition. At the various points in its course the following amounts of water have been found to be present for every pound of bone dry fibre.

In wash pits	3.53 lbs.
At knotter	87.74 lbs.
At centrifugal screens and sand settlers	135.20 lbs.

As this is altogether too dilute to be handled properly in the bleaching system it is necessary that part

place before the leak is discovered. Perforated sheet copper has been found very satisfactory for covering these washing drums, and although the individual holes are larger than those in the machine wire the actual loss through them is no greater. In this apparatus the highly diluted stock from the sand settlers enters in a continuous stream at one end of the vat and is worked along toward the discharge end by the turning of the washing drums, each one of which takes out part of the water as it passes the stock along. In one outfit of this kind in which there were five drums in series the average results during a week's run proved that the amount of water per pound of fibre was reduced from 1,248 lbs. to 24.6. In removing this water a small amount of fibre is lost, but if the covering of the washing drums is in good condition the loss is very slight. From a number of careful tests it has been found that one pound of fibre, or rather of suspended matter, is present in a volume which varies from 5,700 to 11,500 pounds of water. This loss amounts to about 1.2% of the total fibre passing through the concentrator, but as it is usual to carry back to the screens about half of this water the actual loss is only about 0.6% of the total fibre. Even this is not as bad as it seems for microscopic examination of the suspended matter removed from this water by filtration shows that most of it consists of fragments of fibres and of cells from the medullary rays, and that its paper making value is very slight.

After leaving the concentrator the fibre is ready to be bleached, and is usually carried to the bleaching system by some sort of conveyor or by pumping.

THE END.

STRAWBOARD MANUFACTURE IN ENGLAND.

Commenting on the strawboard situation in England, and referring to sample of the product of an English mill using English straw which sold at £24 when Dutch board was £30, the World's Paper Trade Review says:

"We imagine that British box makers will be very loth to use foreign-made boards when an equally suitable strawboard substitute can be secured at a cheaper rate. Not only is the British board made in our own mills, but also from our own material. Our greatest regret is that bookbinders have not yet been convinced that a board better than that made by the Dutch is available from our own mills at an equal or cheaper price. Two years ago we had high hopes that the problem of straw utilization and strawboard manufacture was well on the way toward solution, but it now seems obvious that very little progress has been made, and we doubt if the effort to organize the collection and use of straw will be maintained now that the war is over.

If we had the same initiative and organization here as the papermakers of America, the subject of straw utilization would have been thoroughly discussed and investigated for the benefit of the trade generally. Statistics and mill data would have been issued for the use of the mills interested, and very probably sound progress would have been made. However, we are a conservative lot, even now, and it is already evident that the future of British paper-making will be much like its past, except for the more direct participation and influence of Governmental action."

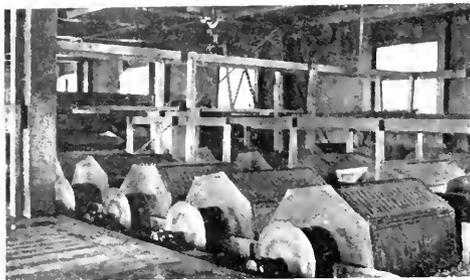


Fig. 31.—Drum Washer Concentrator.

of the water be removed. This is accomplished by numerous devices, among which may be mentioned the worm knotter. If this is covered with plates containing small perforations the fibre will not pass through to any extent, while the water drains away rapidly, being aided in its passage by the tumbling over and over of the fibre, as it is worked along by the worm. When used as a concentrator the good fibre is delivered from the same point as knots when it is used as a knotter and the waste water is drawn off from the vat.

Another type of apparatus, which is old fashioned, but is still doing good work in many mills, consists of a series of drum washers mounted in a long vat. Fig. 31 shows a photograph of this type of concentrator. Each washer is octagonal in section, and is constructed inside with a series of dippers, which scoop up the water and deliver it from an opening at the axis of the drum. The washers may be covered with old machine wire, but this is apt to develop holes or tear suddenly and considerable loss of fibre may take

ABITIBI ITEMS.

The Toronto "Globe" takes a vigorous shot at the Abitibi Power and Paper Co. for referring to earnings as a percentage of \$5,000,000 common stock. The paper declares this is all water and represents no money or labor investment, but only a government rented right to use timber limits and water powers. The "Financial Post" comes to the support of the company with a battery of excellent argument, in which we find:

"The Abitibi Company secured these rights under a Government policy that is still in force and supported by the 'Globe,' which seeks to encourage the development of unproductive areas. The Abitibi Company found these limits a forest primeval, and from first to last has spent from \$7,000,000 to \$8,000,000 developing this, creating an industry that produces 220 tons of newsprint a day, and saves the country from the danger of a paper famine, and incidentally has enabled the 'Globe' to get its paper at a lower price than if there were a serious scarcity of print. Moreover, millions of dollars' worth of pulp and paper are shipped every year across the border, and besides the general advantage of a distribution, help the cause of exchange between the two countries. It took over lands that were useless to the Government, and valueless practically for settlement. It made the lands valuable, worth over five million dollars—not for settlement, for the land is covered with forest, but for pulp and paper manufacturing. What created this value? Not the Government; not contiguous development, for there has been none; it was the expenditure of the company in millions of dollars in an out-of-the-way place along the T. & N. O. Railway."

The pulp departments are operating only to the extent necessary to supply the paper mill. This is largely due to the lessened demand from smaller mills that have been able to make their own pulp requirements. It is expected that low water conditions will revive the demand for pulp from mills with plenty of power.

W. A. Blake was recently added to the board of directors. He was president of the Montreal Board of Trade last year, and is prominently identified with a number of important concerns.

PUBLISHERS COMPLAIN AGAINST McINTYRE.

The Publishers' Paper Company filed a complaint that A. G. McIntyre misused his position as president, director and general manager in making an agreement on behalf of the company with the Mooney & VanDyke Co. of Canada, for groundwood pulp. It is stated that \$10,000 was paid the latter, and that only \$320 worth was delivered. McIntyre is charged with knowing their inability to live up to their agreement, and that the Publishers' Paper Co. did not authorize the transaction. A refund of monies is demanded.

Mr. McIntyre makes a general denial of the charges and states that while he made the contract without a vote of the board of directors, each knew of the deal and yet expressed no disapproval. He denies that the transaction was other than for the good of the company, and according to current business practice. He says the complaint was not filed by anyone with authority to do so, as the directors were not elected in the prescribed manner. He asks for dismissal of the complaint, and demands payment of costs by the plaintiff.

LOOKING BACKWARD.

Ten years ago, or rather in 1908, the British Canadian Pulp and Paper Company was formed in Vancouver with the intention of immediately starting construction of a pulp and paper mill at Nelson, B. C. It was the intention of this concern to manufacture wrapping paper. Nothing ever came of this intention, however, and yet we still occasionally hear of some new company being formed for the erection of a mill at this place. There seems to be wood and water enough, but market and financial conditions have not yet made the proposition a feasible one. In fact, announcement is made in another column of the incorporation of a company to establish a mill at Fernie, B. C.

PULPWOOD RE-FORESTATION.

The Abitibi Power & Paper Company, Ltd., intends to begin a re-forestation program this year and has asked for the co-operation of the Commission of Conservation in this work. The Commission has been co-operating with the Riordon Pulp & Paper Company and the Laurentide Company, Ltd., for one and two years respectively in re-forestation work, and considerable headway has been made. The initial studies have concerned the rate of re-forestation of cut-over pulpwood lands under natural conditions. Investigations to date point to the fact that it will take from 50 to 100 years for spruce and balsam to grow to merchantable size on these cut-over lands, whereas lumbermen have thought that re-forestation would take place in about 30 years. Another disquieting feature the investigations have disclosed is the fact that where the pulpwood species are cut down the new growth is predominantly hardwood for which, as yet, there is little market. These scientific facts are of paramount importance both to the pulp and paper industry as well as to the Governments concerned, which has always drawn large revenues from the forests.

SOME CANADIAN FORESTRY PROBLEMS.

A general meeting of the Toronto Board of Trade was held this week at which Dr. C. D. Howe, of the Faculty of Forestry, Toronto University, gave an inspiring address on "Some Canadian Forestry Problems." He stated that the conservation of the wooded wealth of the Dominion was of the greatest importance, and that the forest products of the country were valued at \$116,000,000 in 1917. The industries wholly or partially dependent upon wood in some form increase the wealth of Canada by \$250,000,000 annually. Dr. Howe added that the lumber industry with an invested capital of approximately of \$150,000,000 stands third as the producer of wealth in the Dominion and employs 50,000 people, and distributes annually in wages \$40,000,000. The forests of the eastern provinces contributed during the past ten years through sales and rents around \$35,000,000.

TO EXPLORE UNGAVA.

The steamer Amherst, carrying the first group of explorers who will penetrate the wilds of the Ungava for development work, left Quebec on April 8 for Clarke City, on the North Shore, whence the party will proceed inland to the Ungava region.

Never try to put a belt on when it is in motion. Many a person has lost his life or a limb by doing so.

Technical Section

SUMMER WORK FOR STUDENTS.

As a development of the action taken by the Technical Section in establishment of a class of Student Membership, efforts have been made to provide actual contact between the student and the industry by encouraging mills to employ students in the summer vacation. After "feeling out" the mills belonging to the Association, the following letter is being sent out to the colleges and universities:

"Dear Sir, We are very anxious to interest students in Canadian Universities in the possibilities that lie in the pulp and paper industry. Believing that there are a great many students who would like to spend their summer vacation in both useful and instructive work, arrangements have been made with several of the companies who are members of this Association to find room for students during the summer months.

In the hope that some of the students may consider the pulp and paper industry as their future livelihood three prizes of \$100, \$50 and \$25, with accompanying medals, have been offered by the Executive of the Technical Section of this Association for the best essay on "My Summers' Work in Pulp and Paper Mills," and this offer is open to the students of any Canadian University.

Those who desire to enter any of the Canadian mills for the summer months will, of course, be remunerated at the standard wages, and are requested to communicate, in the first place, with A. L. Dawe, Secretary of the Technical Section, Canadian Pulp and Paper Association, 304 Shaughnessy Building, Montreal.

Some of the mills which have already signified their willingness to accept students under these conditions are as follows:

Laurentide Company, Ltd., Grand Mere, Que., 10 students for forestry division.

Rolland Paper Company, St. Adele, Que., 1 student. This company manufactures high grade papers.

Kinleith Paper Mills, Ltd., Merriton, Ont., manufacturers of book and writing papers, four or five students.

McLeod Pulp Company, Liverpool, N.S., manufacturers of pulp, 1 student.

Brompton Pulp & Paper Company, East Angus, P.Q., 5 students.

Spanish River Pulp & Paper Mills, Sault Ste. Marie, Ont., have vacancies for a few students.

Dryden Pulp & Paper Co., Ltd., Dryden, Ont., manufacturers of pulp and paper, 6 students.

Don Valley Paper Company, Toronto, Ont., 1 student.

Interlake Tissue Mills, Merriton, Ont., 1 student.

Powell River Company, Powell River, B.C., manufacturers of pulp and paper, 6 students.

Yours truly,

A. L. DAWE,

Secretary.

No doubt other opportunities will arise and it is hoped that all the places will be filled. Two ends will be served: the man who should enter the industry will find the place he belongs in, and the misfit who might have fallen in by accident will know at least one thing he doesn't want, and the industry will be saved that many deadheads.

EXPERTISM IN ENGLAND.

An indication that the English paper maker is working up to the need of the expert is shown in the announcement of Messrs. Sindall and Bacon, that to meet the growing needs of their business as analytical and consulting chemists, they have removed to larger and more convenient premises at 27 Walbrook, London, E.C. 4.

REVIEW OF RECENT LITERATURE.

A-4. Testing moisture in pulp. E. B. Slack, *Pulp & Paper*, 17, No. 1, p. 265 (1919). It is shown that a 3" strip cut across the whole width of the lap is representative of the lap, that for hydraulic pressed pulp, the strip method gives results about 2% higher than the wedge and than the whole sheet, and that a 3" strip cut across the face of a roll represents the roll when freshly made. For testing rolled pulp after storage, it is recommended that a 3" strip across the roll be taken from the outside layer and four others from layers at least 1½" inside the roll. Tables and charts are given showing the agreement of the results of various test methods, and the moisture content of various layers of rolled pulp after storage.—R. C.

D-4. Roberts' brothers invent hydraulic pulp stone grinder. *Paper Mill*, 41, No. 53. The burr, which extends across the entire face of the stone is applied by hydraulic pressure, which may be varied at will, and is automatically withdrawn after any predetermined time of sharpening.—R. C.

E-2. Purification of sulphite-cellulose waste lyes. H. Achenbach, Nussdorf, Ger. Pat. 306,898, *J. S. C. I.* 37, No. 24.—The spent liquor from the digester, which may undergo a preliminary purification by spraying, is fed into the top of a scrubbing tower packed with stones and allowed to trickle down in contact with ascending hot flue gasses. The concentrated liquor is collected at the bottom of the tower, whilst the vapors containing sulphur dioxide and volatile acids pass away through the hood of the tower, into a horizontal tubular cooler containing arrangements which facilitate the maximum utilization of the cooling water.—D. E. S.

E-2. Canadian waste sulphite liquor as a source of alcohol. V. K. Kriebel, *Pulp & Paper*, 17, No. 5, p. 116 (1919).—The best Canadian liquors contain as high a percentage of sugar as those in Europe, and should yield 1% alcohol by volume. Two classes of liquors, one containing 20% of its organic matter as sugars and the other 28%. It was concluded that most of the sugars were produced before the seventh hour, that any subsequent temperature of over 145° C reduced the yield, and that the first sugars destroyed were the fermentable ones.—R. C.

E-5. Indirect cooking by forced circulation. Dr. Albert E. Neilson, *Pulp & Paper*, 17, No. 5, p. 105, (1919).—A brief resume of sulphite cooking is given, followed by a complete analysis of the Morterud process.—R. C.

K-6. Preparation of pulp from sugar cane for paper making. W. O. Kazalsi, Kitaguchi, assignor to H. E. Ridings, Yokohama, Japan, U. S. Pat. 1,278,199, *J. S. C. I.* 37, No. 24. A fibrous composition or paper-making pulp is prepared by treating sugar cane leaves with water, caustic soda, lime, bleaching powder and sulphuric acid.—D. E. S.



UNITED STATES NOTES

A special committee of five representing the American Pulp and Paper Association has given through D. A. Smith, one of its members, assurance to Col. Arthur Woods, special assistant to the Secretary of War, that the organization is ready to give the fullest co-operation of the paper industry to any plans Colonel Woods may have for giving the war veterans proper work. Colonel Woods has charge of the work of providing employment for discharged soldiers and sailors. Practically every paper mill in the country, Col. Woods was told by Mr. Smith, had taken back all employees discharged from the service, and would continue to do so. He asked to be notified of any ease of paper manufacturers refusing to do so, and requested the names and addresses of soldiers and sailors who entered the service from the paper industry and have been unable to find proper employment.

The Constantine Board & Paper Company, whose mill at Constantine, Michigan, was gutted by fire last September, with a loss of \$200,000, has had the destroyed buildings reconstructed and announces that it will be possible to resume operations on or before May 1. The new mill will have a capacity of 50,000 pounds of board every 24 hours, and will give employment to about 60 persons.

In the annual report of the International Paper Company made public last week, President P. T. Dodge, referring to the pulpwood supply of the continent, says that owing to the vast consumption for various uses, American wood, suitable for pulp, is rapidly disappearing. The remaining stand of the company, he says, is largely in the Canadian provinces, where it has very extensive holdings in fee and under Crown leases, in addition to its holdings in the United States. The Canadian wood from leased Crown lands, says the report is not available to the United States mills, since its exportation to the States is prohibited, although exportation was permitted when existing leases were made. This grossly unfair condition is said to be due to the failure of the Washington legislators and officials to protect a home industry. The result has been the steady growth of Canadian mills with no increase in the United States for some years. "Certain it is," concludes the report, "that many of the new mills in the United States—outside those owned by the International Paper Company—will be compelled to discontinue, and that the industry will be confined largely to Canada and European countries. It is equally certain that to protect its interests and secure proper profits, the International Paper Company will be compelled to transfer its operations in part to Canada in order to utilize its unexcelled wood holdings and water powers."

According to the annual report, the International Paper Company and subsidiaries for the year ended December 31, last, show a net after taxes of \$5,022,026, against \$8,851,503 in 1917. The surplus after preferred dividends was \$3,522,026, equivalent to \$17.82 a share on the \$19,704,008 common outstanding. In 1917, the surplus, after preferred dividends, was \$7-

390,402, equivalent to \$37.41 a share on the \$19,750,940 outstanding.

Plans for launching a nation-wide publicity and educational campaign to offset the propaganda circulated before the war by the Imperial German Government that German made dyes and chemicals were far superior to those produced in other countries, were outlined last week at the convention of the American Chemical Society at Buffalo. Details of the campaign are being mapped out by the newly organized dye section of the society under the leadership of Dr. J. M. Reese, of Philadelphia, associated with the du Pont de Nemours Company. All of the dye chemists of the country will be asked to become affiliated with the dye section of the society. "Dyes made in Buffalo will soon become known all over the world," said William H. Nichols, president of the American Chemical Society. "Buffalo is fast becoming the dye making centre of the world."

William S. Culbertson, member of the United States Tariff Commission, addressing the convention of the American Chemical Society at Buffalo last week, urged the enactment of tariff and unfair competition laws to protect essential and desirable chemical industries, such as the manufacture of dyestuffs, developed during the war. The tariff commissioner said he had not regarded with favor the plan adopted by Great Britain to provide State aid for the dye industry and an embargo on dyes except where importations were permitted under special licenses. "The alternative," said Mr. Culbertson, "is a tariff which will equalize with a fair margin the conditions of competition between the United States and foreign countries."

The American Seamless Container Company was recently incorporated at Wilmington, Delaware, capitalized at \$300,000. T. L. Corteau, P. B. Drew, and M. M. Clancy are the incorporators. The new concern will manufacture seamless containers, boxes, etc.

The Cliff Paper Company, whose mill at Niagara Falls, N.Y., has been closed since the Government power restriction order went into effect more than a year ago, resumed operations last week. The mill is now being run at capacity day and night, a full force of 60 being employed.

The H. S. Crocker Company, of San Francisco, passed on April 1 into the hands of Sylvain S. Kaufman, of Los Angeles, his brother, Eugene Kaufman, and William H. Lowe, of San Francisco. The concern has been for more than sixty years under the control of the late H. S. Crocker, and his heirs. It has been reincorporated under the same title, with an authorized capital stock of \$1,500,000, of which \$1,000,000 is common stock and \$500,000 is preferred. The officers of the reorganized company are: Sylvain S. Kaufman, president; John T. Gilmartin, vice-president, and Eugene Kaufman, secretary and treasurer.

The Ohio Public Health Bulletin records a typhoid epidemic because the bleaching powder used for disinfection was only 20 per cent. of the guaranteed strength, so the bugs got by. Chemistry pays.

REVISED CLASSIFICATION SYSTEM FOR PULP AND PAPER LITERATURE.

A classification system for filing abstracts, literature and patents, was proposed by the Committee on Abstracts at the fourth annual meeting of the Technical Section. It was voted to try the scheme out for a year. Since that meeting some valuable suggestions have been received and important changes made, especially under Forestry. The committee invites further criticism, so that the system may be made most satisfactory.

So many members are using this scheme that the classification of abstracts will be continued. In order to supply the many requests for copies of the system, it is necessary to reprint it, and this occasion is taken to make a few necessary changes—all of B; N-9; P-1; Q-1; R-4; R-9; and R-14.

MAIN DIVISIONS.

This index is divided into 16 classes, as follows:
A.—Properties, chemistry and testing of raw and building materials and finished products.

B.—Forestry.

C.—Wood preparing and equipment.

D.—Groundwood manufacturing and equipment.

E.—Sulphite manufacturing and equipment.

F.—Soda and sulphate manufacturing and equipment.

G.—Pulp preparing and drying, operation and equipment.

H.—Bleaching, bleach manufacturing and equipment.

K.—Paper manufacturing and equipment.

L.—Articles produced from pulp and paper.

M.—General equipment.

N.—Power generating and equipment.

O.—Water supply and equipment.

P.—Safety engineering.

Q.—Planning and construction.

R.—General.

Each class is divided into the necessary number of sub-classes.

The classes and sub-classes can be further extended as required.

As far as possible the same subjects in the different classes have the same sub-numbers, for example: Manufacturing control and tests is sub-number 1, by-products is sub-number 2, and consumption of raw material, unit power and yield is sub-number 3.

* * *

A.—PROPERTIES, CHEMISTRY AND TESTING OF RAW MATERIALS, BUILDING MATERIALS AND FINISHED PRODUCT.

(Note.—Chemistry and testing for control of manufacturing processes is filed under the various groups of manufacturing.)

A.— 1 Wood.

A.— 2 Rags.

A.— 3 Straw and similar raw materials.

A.— 4 Chemical wood pulp.

A.— 5 Mechanical wood pulp.

A.— 6 Fuel.

A.— 7 Limestone, lime, sulphur and pyrites.

A.— 8 Sodium carbonate, hydroxide and sulphate.

A.— 9 Bleach and salt.

A.— 10 Water.

A.— 11 Clay, other fillers and coating materials.

A.— 12 Size, rosin, starch, alum, glue and casein.

A.— 13 Dyes and colors.

A.— 14 Paper and manufacturers thereof.

A.—15 Cellulose and products thereof.

A.— 16 Building material and metals.

A.—17 Oils and lubricants.

A.—18 Chemicals.

A.— 0 Miscellaneous.

B—FORESTRY.

B.— 1 Botany.

B.— 2 Silviculture (cutting, brush disposal, planting, research).

B.— 3 Protection (fire, insects, fungi, wind, snow, animals, etc.).

B.— 4 Utilization (logging, logging engineering, milling, waste, by-products, distillation, accounting, production, consumption).

B.— 5 Technology (properties, seasoning, kiln drying, use of preservatives, wood substitutes).

B.— 6 Engineering (surveying, mapping, construction, camp management).

B.— 7 Management (mensuration, finance, working plans, organization.)

B.— 8 Grazing.

B.— 9 Economics (Forest resources, influences, conditions, policy, legislation).

B.—10 Markets (domestic and foreign).

B.— 0 Miscellaneous (text-books, education, reports, history).

C.—WOOD PREPARING AND EQUIPMENT.

C.— 1 Manufacturing control and tests.

C.— 2 By-products.

C.— 3 Consumption of raw material, unit power and yield.

C.— 4 Wood measurement.

C.— 5 Transportation and storing.

C.— 6 Slashing and saw mills.

C.— 7 Barking and cleaning.

C.— 8 Chip preparing.

C.— 0 Miscellaneous.

D.—GROUND WOOD MANUFACTURING AND EQUIPMENT.

(Note.—For pulp preparing and drying see Class G.)

D.— 1 Manufacturing control and tests.

D.— 2 By-products.

D.— 3 Consumption of raw material, unit power and yield.

D.— 4 Grinding, grinders and stones.

D.— 5 Wood treatment for grinding.

D.— 0 Miscellaneous.

E.—SULPHITE MANUFACTURE AND EQUIPMENT.

(Note.—For pulp preparing and drying see Class G.)

E.— 1 Manufacturing control and tests.

E.— 2 By-products.

E.— 3 Consumption of raw material, unit power and yield.

E.— 4 Acid making and recovery.

E.— 5 Cooking.

E.— 0 Miscellaneous.

F.—SODA AND SULPHATE MANUFACTURE AND EQUIPMENT.

(Note.—For pulp preparing and drying see Class G.)

F.— 1 Manufacturing control and tests.

F.— 2 By-products.

F.— 3 Consumption of raw material, unit power and yield.

F.— 4 Liqueur making and recovery.

F.— 5 Cooking.

F.— 0 Miscellaneous.

G.—PULP PREPARING AND DRYING—OPERATION AND EQUIPMENT.

(Note.—For manufacture of pulp and equipment for same, see Classes D, E, F.)

- G.— 1 Manufacturing control and tests.
- G.— 2 By-products.
- G.— 3 Consumption of raw material, unit power and yield.
- G.— 4 Pulp handling and conveying.
- G.— 5 Washing and concentrating.
- G.— 6 Screening and riffing. (See also K.—11.)
- G.— 7 Refining.
- G.— 8 Wet machines.
- G.— 9 Drying machines.
- G.—10 Pressing and baling.
- G.—11 Save-alls. (See also K.—13.)
- G.—12 Shipping, storing and weighing.
- G.—13 Pulp, quality and grading.
- G.— 0 Miscellaneous.

H.—BLEACHING, BLEACH MANUFACTURING AND EQUIPMENT.

- H.— 1 Manufacturing control and tests.
- H.— 2 By-products.
- H.— 3 Consumption of raw materials, unit power and yield.
- H.— 4 Bleach manufacturing.
- H.— 5 Bleaching.
- H.— 0 Miscellaneous.

K.—PAPER MANUFACTURING AND EQUIPMENT.

(Note.—See also Class G.)

- K.— 1 Manufacturing control and tests.
- K.— 2 By-products.
- K.— 3 Consumption of raw material, unit power and yield.
- K.— 4 Boiling and washing.
- K.— 5 Pulpers, shredders and chests.
- K.— 6 Special treatment of fibrous materials.
- K.— 7 Beating and refining.
- K.— 8 Coloring.
- K.— 9 Loading.
- K.—10 Sizing.
- K.—11 Screening. (See also G.—6.)
- K.—12 Paper machines.
- K.—13 Save-alls. (See also G.—11.)
- K.—14 Finishing and incidental operations.
- K.—15 Newspaper and hanging.
- K.—16 Kraft and wrapping papers.
- K.—17 Writing, bond and book papers.
- K.—18 Boards.
- K.—19 Coated and waxed papers.
- K.—20 Grease-proof and parchment papers.
- K.—21 Building and roofing papers.
- K.—22 Tissues.
- K.—23 Special papers and treatment thereof. (See also class L.)
- K.—24 Packing, warehousing and shipping.
- K.— 0 Miscellaneous.

L.—ARTICLES PRODUCED FROM PULP AND PAPER.

- L.— 1 Manufacturing control and tests.
- L.— 2 By-products.
- L.— 3 Consumption of raw material, unit power and yield.
- L.— 4 Containers from paper and pulp.
- L.— 5 Artificial silk and other cellulose products.
- L.— 6 Papier mache and molded products.

- L.— 7 Paper yarns and products thereof.
- L.— 0 Miscellaneous.

M.—GENERAL EQUIPMENT.

- M.— 1 Manufacturing control and tests.
- M.— 2 By-products.
- M.— 3 Consumption of raw material, unit power and yield.
- M.— 4 Mechanical transmission.
- M.— 5 Repair shop and accessories.
- M.— 6 Electrical transmission, motors and accessories.
- M.— 7 Heating, ventilation and lighting.
- M.— 8 Pumps.
- M.— 9 Transportation in mill and yard.
- M.—10 Fire protection.
- M.— 0 Miscellaneous.

N.—POWER GENERATING AND EQUIPMENT.

- N.— 1 Manufacturing control and tests.
- N.— 2 By-products.
- N.— 3 Consumption of raw material, unit power and yield.
- N.— 4 Boiler house.
- N.— 5 Coal and ash handling.
- N.— 6 Steam plants.
- N.— 7 Hydro power plant.
- N.— 8 Internal combustion engine plants.
- N.— 9 Electrical power generation.
- N.— 0 Miscellaneous.

O.—WATER SUPPLY AND EQUIPMENT.

- O.— 1 Water supply systems.
- O.— 2 Filter plants.
- O.— 3 Purification and softening plants.
- O.— 0 Miscellaneous.

P.—SAFETY ENGINEERING.

- P.— 1 Safety appliances and practice.
- P.— 2 Education and hygiene.
- P.— 3 Social welfare.
- P.— 4 Hospital and first aid.
- P.— 5 Safety statistics.
- P.— 0 Miscellaneous.

Q.—PLANNING AND CONSTRUCTION.

- Q.— 1 Town planning and building.
- Q.— 2 Mill planning and building.
- Q.— 3 Construction cost.
- Q.— 4 Concrete.
- Q.— 0 Miscellaneous.

R.—GENERAL.

- R.— 1 Description of mills and items relating thereto.
- R.— 2 Biography and literature.
- R.— 3 Office system.
- R.— 4 Business relations and trade customs.
- R.— 5 Statistics and market reports.
- R.— 6 Manufacturing system.
- R.— 7 Labor.
- R.— 8 Transportation and freight rates.
- R.— 9 Tariffs, taxes and laws.
- R.—10 Financing and investments.
- R.—11 Insurance.
- R.—12 Manufacturing costs.
- R.—13 Societies and associations.
- R.—14 Research and standardization.
- R.— 0 Miscellaneous.

Tightening or guide pulleys should be applied to the slack side of the belts and near the smaller pulley.

PULP AND PAPER NEWS

Charles V. Syrett, manager of the Victoria Paper and Twine Co., Toronto, was in Baltimore, Md., last week attending the funeral of Charles F. Corning, Vice-President of the Hubbs and Corning Co., of Baltimore and Richmond.

F. A. Ritchie, of Ritchie and Ramsay, Limited, coated paper manufacturers, Toronto, is home after spending a pleasant winter holiday in Trinidad and other islands of the West Indies. He greatly enjoyed the outing and returns in fine health. C. N. Ramsay intends leaving the latter part of next month on an extended trip to Great Britain and Europe, and will be absent for some time.

Fred L. Ratcliff, President of the Ratcliff Paper Co., Toronto, who with his wife, has been spending some weeks at various points in Florida, has returned home and is once more at his desk and enjoying better health than he has for many months past.

A. B. Stovel, of the Stovel Co., the well known printers and publishers, of Winnipeg, was in Toronto last week on his way back from a trip to New York and Hot Springs, Va.

E. Pullan, of Toronto, has returned from a business trip to England, where he has been looking into the possibilities of the export trade in rags and other lines. He reports that the great barrier in the way of foreign business at the present time is the excessive freight rates and shipments at present are limited.

Joseph G. Mayo, assistant to the manager of the Mattagami Pulp and Paper Co., Smooth Rock Falls, Ont., recently resigned and has gone to Norwich, Conn., where he has taken a responsible position as president of the Ironsides Board Corporation.

E. A. Crippen, of Toronto, who represents several important paper mills of the United States in Canada, has removed his offices from 20 to 28 Royal Bank Chambers, Spadina Ave., Toronto, where he has larger and more commodious quarters.

It is understood that steps are being taken to establish a pulp mill in Fernie, B.C. The owner is C. E. Hope, and the proposition is now being considered by the Board of Trade of Fernie.

The dates of two most important gatherings have been set. The sixty-first annual convention of the Canadian Press Association, Inc., will be held at the King Edward hotel in Toronto, on Thursday and Friday, June 5 and 6, and an interesting program has been arranged. Larger quarters than usual have been secured for the sessions of the various sections. The fourth annual convention of the Canadian Paper Box Makers' Association will be held at the Windsor Hotel in Montreal on Tuesday, June 24, and an extra attraction in connection with the conclave is the trip which will be taken by steamer from Montreal to the Saguenay river, from June 24 to 27. The business sessions will be continued on board the boat, and it is expected that the attendance will be unusually large and representative.

The Canadian Trade Corporation, Limited, has been formed with a capital stock of \$100,000, and headquarters in Montreal as well as a branch office in London, Eng., to carry on a general trading, exporting and importing business. C. C. Gardner, formerly of the Canadian Bank of Commerce, Montreal, is at the head of the new organization.

The pulp mill of the Nashwaak Pulp and Paper Co., at St. John, N.B., has resumed operations after being shut down for some time. During the interval extensive repairs and alterations have been made to the plant.

The new pulp plant at Beaver Cove, B.C., which will have an output of forty tons a day, will be in operation in June. The equipment is now being installed. The company will also operate a saw-mill with a daily capacity of 125,000 feet. W. H. White is manager of the company, and G. C. Pratt, secretary, and Chicago capital is at the back of the enterprise. The company holds some 500,000,000 feet of hemlock and larch.

J. V. McNulty, formerly a widely known newspaper man of Lindsay, Ont., who for several years past has been manager of the Western Lumberman at Vancouver, and R. J. Templeton, editor of the paper, have bought the Pacific Coast Lumberman, of Vancouver, from the Edgecumbe-Toombs Co., and have taken possession.

J. J. Gibbons, of Toronto, who is at the head of the well known advertising firm of J. J. Gibbons, Limited, has been appointed Chairman of the Toronto War Savings Stamp Committee.

The coating paper plant of the Provincial Paper Mills Co., at Georgetown, Ont., is closed down for a few days owing to the engine having to be shipped to Galt to undergo some extensive repairs.

"Waterproof Paper Products and Their Industrial Possibilities," was the subject of an interesting and instructive address delivered recently before the Montreal Branch of the Engineering Institute of Canada, by J. A. De Cew, of Montreal. Besides substitutes for woodenware he referred to the possibilities of the paper cloth industry, and the vast development of the use of paper products. During the past decade a large number of new uses had been found for paper products, the latter even supplanting boards for concrete forms. Future developments were largely tied up in the ability of manufacturers to make paper products waterproof. The real development and commercial worth of paper cloth had yet to be demonstrated although various experiments in several countries had been made with some measure of success.

The many friends of Carl Riordon, of the Riordon Pulp and Paper Co., Montreal, are congratulating him on being made a member of the Royal Commission to investigate industrial relations in Canada. He represents one of the largest employing firms in the Dominion and is a past president of the Canadian Pulp and Paper Association.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, April 14.—There is a steady improvement in trade in all lines of paper, and business is getting better all the while. Considering the numerous disturbing elements such as the tariff legislation, the income tax, the signing of the peace terms, and other contingencies of the future, the wonder is that business has kept up as well as it has. Printing establishments and publishing houses are getting busier all the while, and jobbers report that a fine trade has been done in all lines. Buying is being conducted a little more freely each week, and a more hopeful tone prevails all the while. There is a steadily better outlook for export, and if a preference is granted the British Dominions there should practically be no limit on the volume which Canada can do with the Mother Country with improved facilities for transportation.

There is at present being produced in Canada more book, bond and writing paper than the Dominion, under normal conditions, can absorb. This was caused by the starting up of a new plant some months ago, and another machine is about to be added to another plant, which will place the industry in a fine position for export. There is one thing about the paper manufacturing business, and that is, it either runs behind the normal demand or anticipates it when a new machine is installed, and requisitions then have to overtake production. The process of adjustment generally extends over some months, and book and bond paper are now abundant to meet all Canadian needs. Export business will supplement local requirements, that might not in themselves be sufficient to keep all plants busy and running to capacity.

Every one connected with the pulp and paper business feels that Canada is on the eve of big developments. Not only has the Dominion taken a foremost place in the matter of newsprint, but in a pulp sense it is rapidly coming to the fore. As much of the sulphite is being bleached at the present time there will be a wider demand than ever for the product and foreign importations to the United States will be replaced by the Canadian article. It is less than three years ago that the output of bleached sulphite in

Canada was not over sixty tons a day, and now it runs to several hundred tons. One company alone by the end of 1919 will be turning out 260 tons of bleached, and others are getting ready to install the necessary equipment for the conversion of their product into the bleached article. Prior to the war there was imported into the United States from Europe about fifteen million dollars' worth of pulp annually, and this quantity is now probably twice as valuable, and Canada is going to meet the demand.

More and more attention is being devoted to reforestation, and the fact that three large Canadian companies have combined to conduct reforestation programs shows that cognizance is being taken of the future. Initial studies are being conducted concerning the rate of reforestation of cut-over pulp wood lands under natural conditions. The Commission of Conservation is co-operating in this most important work.

The newsprint investigation seems as far off regarding final settlement as ever, and another adjournment has taken place. It looks, as has been contended for some time, that the government is playing for time and awaiting the signing of the Peace terms in Europe, when the inquiry will, in all likelihood, be called off. This is the rumor that is going around at any rate. The extension of the present price of \$69 for some time and other omens would indicate that the report may be true. It is also alleged that as soon as Peace is declared, the probe will end as regulation was adapted as a war measure, and the Government will be thankful to be rid of a nasty problem. The federal authorities want to please both the manufacturers and publishers, and marking time would seem to be the best way out of the dilemma at this juncture.

The Dominion Postmasters' Association has been meeting at Ottawa, and one of the subjects which created considerable discussion was the difficulty encountered in the handling of second class mail matter. It was pointed out that all second class matter is carried far too cheaply, and its transmission at the existing rates constitutes a great financial loss to the country each year. A resolution was passed calling

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES ²⁰⁷⁴ 2075 MURRAY HILL, NEW YORK

Have an extensive
and steady market
for

KRAFT PULP

When you have
any surplus to
offer write us

for an increase of the postal rates on newspapers, and the prohibition of scrap paper as wrappers. It has been the practice of several publishers to cut up old newspapers and label them and use these as wrappers. The wrappers are very brittle, and frequently come off, causing delays, and non-delivery of papers for which the postal department is unjustly blamed.

Business in the rag and paper line is only fair, and mills are not buying freely. The trade hopes to do a large export business in the near future, and the possibilities have been investigated. The ocean freight on rags is now 3½ cents per pound, whereas it was formerly one cent, and before the war the carriage from Toronto across the water was as low as 45 cents a hundred, which included rail haul as well. Some cargoes of rags have been sent forward of late, but the quantity is limited, and if there was substantial reduction a splendid foreign business could be undertaken. England is in the market for large quantities.

There are more inquiries all the time coming in for paper, and when shipping facilities are adequate, there will be much expansion of the trade. Production and distribution are more rapidly becoming adjusted on the other side, and reports to hand are to the effect that a better tone prevails each week. There is no doubt that trade with Canadian jobbers and mills has not suffered to the same extent that it has across the border. The continued activity in pulp and paper securities shows that the general feeling is one of confidence in the development and prosperity of the industry as a whole. Prices in all lines are holding firm, and the reductions, since the signing of the armistice, have been very few, and over five months have elapsed. This, in itself, constitutes a good augury for the success of pulp and paper activities during the coming year. As has been frequently pointed out in these columns, the great question now is export, so that the surplus quantities will be shipped abroad to take up all stocks now on hand, and cause pulp mills especially to resume their wonted activity.

Pulp Prices.

	F.O.B. Mill.
Groundwood pulp	\$28.00 to \$29.00
Sulphite, news grade	\$65.00 to \$75.00
Sulphite, easy bleaching	\$87.00 to \$89.00
Sulphite-bleached	\$100.00 to \$105.00
Sulphate	\$85.00 to \$90.00

Paper.

*News rolls at mill, in carload lots	\$3.45
*News rolls in less than carload lots	\$3.52½
*News sheet at mill, in carload lots	\$3.80
*News sheets in less than carload lots	\$3.92½
xBook papers (carload), No. 1	\$9.75
xBook papers (ton lots), No. 1	\$10.00
xBook papers (carload), No. 2	\$9.50
xBook papers (ton lots), No. 2	\$9.75
xBook papers (carload), No. 3	\$8.25
xBook papers (ton lots), No. 3	\$8.75
Ledgers	15c up
Sulphite bonds	131½c
Light tinted bonds	141½c
Dark tinted bonds	16c
White Wrappings	\$5.25
Writings No. 2 M.F.	121½c up
Coated book and litho, No. 1	\$12.25
Coated book and litho, No. 2	\$11.25
Coated book and litho, No. 3	\$10.50

Coated book and litho, colored	\$12.50 to \$14.00
Grey Browns	\$5.25
Writing No. 1 (S. C.)	13c up
Fibre	\$7.35
Manila, No. 1	\$7.35
Manila B.	\$5.60
Tag Manila	\$6.50
Englazed kraft	\$9.00
Glazed kraft	\$9.00
Tissues, bleached	\$1.35 to \$1.90
Tissue unbleached sulphite	\$1.25 to \$1.75
Tissues, cap	\$1.00 to \$1.40
Tissues, manila	90c. to \$1.20
Natural greaseproof	15c.
Bleached grease proof	19c.
Genuine vegetable parchment	22c.
Bleached white glassine	22c.
Drug papers, whites and tints	8½c to 9c.
Paper bags, manila (discount)	35 per cent.
Paper bags, kraft	27½ and 10 per cent.
Confectionery bags	34 per cent.
Gusset bags (manila)	35 and 15 per cent.
Straw board	\$75.00
Chip board	\$75.00
Vat lined chip board	\$80.00
Filled wood board	\$83.00
News board	\$80.00
Double manila lined board	\$90.00
Manila lined folding board, chip back	\$87.50
Pulp folding board	\$95.00
Jute board, No. 3	\$75.00
Tag board	\$155.00
White patent coated board	\$115.00 to \$130.00
Grey folding board	\$115.00
Pasted board	\$95.00

*For Canada only.

x These prices are for machine finish, super-ealen-der one-half cent higher.

NEW YORK MARKETS.

New York, April 12.—Moderate activity has prevailed in the paper market this week, and prices on most grades have been maintained. Slight recessions have occurred in quotations on certain grades, but generally speaking, the price situation shows little change, despite the absence of strong factors in the market. Demand from consuming sources continues light, buyers absorbing merely hand-to-mouth quantities of paper as their needs arise, and evincing practically no disposition to anticipate their requirements ahead. The fact that some manufacturers have reduced prices a bit has prompted consumers to pursue an even more conservative policy than previously, so that the lowering of quotations has had exactly the opposite effect from that desired. Nevertheless, the consumption of most descriptions of paper is on the increase and because of this, consumers have necessarily been compelled to enlarge the volume of their orders, which, on the whole, has promoted a better movement of supplies.

Possibly the strongest grade of paper at present is newsprint. Mills are running at very close to capacity and are promptly shipping their product as soon as it is available. Publishers are taking their full contract allotments and searching for additional supplies. Naturally under such conditions, prices are firm, and job lots of news are fetching attractive prices in current sales.

WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

501 Fifth Avenue, Astor Trust Building
Cor. of 42nd Street
NEW YORK CITY

BRANCH OFFICES:

Buenos Aires, Argentine,
Rio de Janeiro, Brazil.

Book papers also are firm and in more demand. Reports from mill centres are to the effect that manufacturers are gradually broadening the scope of their operations, and judging from indications, the book paper industry is entering into a period of business activity and prosperity. Consumers are freely inquiring for supplies to augment their contract commitments, and are placing orders for substantial quantities of paper for immediate and future delivery. Prices are firm and advancing. Tissues are in moderate call and notably steady. Reports have been heard of manufacturers granting slight concessions in price on certain grades, but the popular brands are holding steady and are moving in a consistent, though somewhat restricted, manner.

Fine papers show little improvement. Such demand as prevails runs more to the low grades, and buyers are confining their purchases even of these qualities to goods directly required. Prices on some kinds of writing papers have declined. Competition between mills to secure orders has induced some to lower quotations, and buyers, apparently feeling that the long awaited fall in the market had commenced, are holding off in so far as their requirements will permit. Wrapping papers also are comparatively quiet, although they are moving in larger volume than recently. Demand is noticeably restricted, however, and in this instance also runs toward the cheaper grades.

Boards are steadily picking up in point of activity. Box makers are laying in spring supplies and are purchasing with much more freedom than has characterized their attitude for some months. Nevertheless, there are no consumers who are stocking up beyond their actual requirements. No one doubts, apparently, that they will be able to secure all the board wanted when they want it, and consequently are not buying ahead. In view of this, predictions are made that the usual mid-summer period of dullness in the board market will fail to develop this year, for it is expected consumers will be in the market off and on all the time.

Groundwood.—Very little change has occurred in the mechanical pulp situation. Demand continues at a low ebb and business during the present week has consisted chiefly of transactions involving small tonnages of pulp seldom exceeding two or three carloads. Consumers report they are supplied with contract pulp and with stock on hand and have not yet begun to buy in the open market in a normal way. Indications are, however, that reserve stocks at consuming plants are being rapidly reduced, and grinders look for demand to expand with a rush in the very near future. Quotations range about the \$26 per ton mark in the East, and while talk is heard of some supply being available at slightly lower figures, it is not believed that any sizable amount can be bought at below \$26.

Chemical Pulp.—Chemical pulps are in restricted demand and the market is dull. Dealers in domestic pulp and importers of Scandinavian fibre are a unit in describing conditions as unfavorable, and they assert that the sales they are putting through have little influence on the general trend of the market. The whole truth of the matter seems to be that consumers are not in need of fresh supplies of sulphite. Most of them are relying on contract shipments and are finding these ample to serve their current needs, and because of the fact that there is no inducement for them to stock up, they are holding aloof as buyers.

Prices are easy and several grades prevail on lower levels. Foreign bleached sulphite has sold in this market at 8.25 cents per pound ex-dock, while foreign unbleached sulphite has declined to 4.50 cents, with sales definitely recorded at that price. Scandinavian kraft has fallen off in price to a marked extent, quotations now prevailing at from 4.50 to 4.75 cents a pound on the dock. Domestic grades are relatively steady. Newsprint sulphite is held at between \$65 and \$70 per ton, while easy bleaching sulphite is quoted at 4.25 to 4.75 cents, and domestic kraft at 4.25 to 4.50 cents.

Rags.—Aside from one or two grades, very little business has passed in rags this week. Several descriptions have moved in a fair way, but it is significant that they have been going into other channels than for paper mills. Repacked thirds and blues have ruled fairly active, but fibre mills have been the chief buyers. New white shirt cuttings also have been sought for export, while the low-priced grades of new stock have moved toward shredding plants in moderate volume. Paper manufacturers on the whole evince a lack of interest in the offerings of dealers. Occasional sales are being made, but mills are confining their purchases to rags found available at attractive prices or those which they immediately need. Thirds and blues of repacked quality have sold at around 3.25 cents per pound delivered mills, or in the neighborhood of 3.00 to 3.15 cents f.o.b. New York, depending on the freight rate. No. 1 new white shirt cuttings have realized around 10.50 cents a pound in sales to exporters, while old No. 1 repacked whites have been offered by dealers at 5.50 cents New York, and street soiled whites at about 3.00 cents. Roofing rags are still in a more or less lifeless position. Felt manufacturers are doing practically no buying, and it is difficult to say just what actual market values are. Reports have been heard of scattered sales at a basis of around 1.45 cents, delivered mills, for mixed satinet.

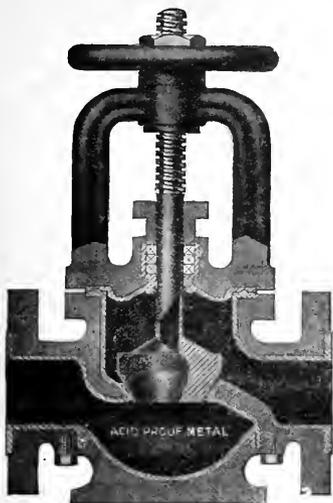
Paper Stock.—Demand from box board mills has been the outstanding feature of the old paper market this week, and a fairly large movement of the low grades of stock has been in view. No. 1 mixed paper has led in demand and sales to consumers at around 45 cents per hundred pounds f.o.b. New York, have been numerous. Folded news also has moved in good volume at a price basis of about 60 cents New York, while a moderate call for books and magazines has existed, with sales recorded at an average figure of 1.30 cents New York for No. 1 packing of heavy book stock. Shavings are extremely quiet and prices are nominal. Current transactions rarely involved more than a carload at a time and there are very few buyers in the market even for lots of this minor character. Kraft paper also is moving more slowly than it has been, while no important demand prevails for manilas.

Bagging and Rope.—Only a routine business has been done in scrap bagging and old rope. No. 1 scrap bagging has sold in limited quantities at around 2.25 cents a pound f.o.b. New York, while No. 1 domestic manila rope is available at 4.00 cents New York.

TELL IT TO J. KINDLEBERGER.

Mr. Hoover said that in some of the war-devastated countries a considerable portion of the population was unable to leave their homes because of insufficient clothing, while new-born babies in Serbia were wrapped in paper because cloth was not available.

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For the present, the Montreal branch will serve largely as a warehouse all engineering assistance being rendered by the Canadian Link-Belt Company at Toronto, where Link-Belt is manufactured for the Canadian market.

Although shipments for the Montreal and Quebec territory will be shipped from the Montreal branch, all correspondence should continue to be addressed to the Canadian Link-Belt Company, Toronto.

LESS COAL AND MORE EFFICIENCY.

Owing to the fact that Canada must import such a large proportion of the coal required for steam making purposes it is practically necessary that the highest efficiency be maintained in the use of fuel supplied. One of the easiest ways of wasting fuel is to throw steam away without extracting from it the last foot-pound of its energy. It is well known that the lower the pressure against which the steam operates the greater the amount of work done. One of the recent important developments in the production of high vacuum is the steam jet air pump. This apparatus is fully described, both as to principle of operation and construction in Bulletin No. 113 of which we have received a copy from the Wheeler Condenser and Engineering Company, Carteret, N.J. The Bulletin contains a number of carefully drawn diagrams showing details of the pump and other features in regard to its use. There are also a few illustrations of other types of apparatus used by the pulp and paper makers.

The majority of pulp and paper mills in Canada derive most of their power from water powers either directly or indirectly, but there are a number of places in the mill where the maintenance of a vacuum is necessary, and where the apparatus manufactured by the Wheeler Company could be used.

NEW NOBLE & WOOD CATALOG

Within a few weeks The Noble & Wood Machine Co., of Hoosick Falls, N.Y., will present to the Paper Trade their new catalog. The catalog will contain about 150 pages, with cuts and descriptive matter of their line of Paper Mill Machinery, and will be both interesting and valuable to paper mill owners, superintendents and purchasing agents. A mailing list is now being made up and those wishing to receive a copy of this book are requested to write The Noble & Wood Machine Co., in order to have their names placed on the list.

The Jeffrey Mfg. Co. has sent out Bulletin 210, a finely done 96 page book, bound in cloth. It describes the Jeffrey pivoted bucket conveyor, especially adapted to steam power plants.

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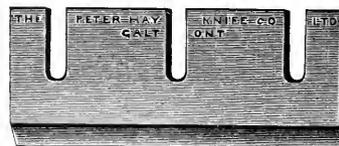


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EDITORIAL

PUBLIC IMPROVEMENTS.

One of the most frequently presented cures for industrial unemployment is a scheme for public works. There are many improvements which the government could undertake and which would provide labor for many workmen who are unemployed at the present time and the prosecution of which would stabilize the demand for labor. There are two phases of this idea, however, which it seems, should be given careful consideration. In the first place, the large sums that have been spent on munitions during the last four years, have come very easily into the hands of finance departments, and have induced habits of extravagance which have no place in the period upon which we are entering. The spending of public money for public works is frequently done with a lavishness that would cause the immediate discharge of the management of an industrial organization. Public monies come from the public pocket and should be used for the public benefit. The public certainly benefits from better roads, better railway and canal transportation facilities, and the public, because the public is blessed with perpetual life, will benefit from such long distance improvements as replanting burned over and other waste lands into productive forests. Also the part of the public represented in the workmen who are given employment in such work will naturally benefit, but none of the advantages is reason or excuse for the waste or the needless expenditure of one cent of the money which the people of Canada must provide. It is too difficult for our country to raise funds for carrying out such a program as may be necessary to have any of it mis-spent.

Another phase, and one which is closely connected with that just mentioned, is that a program for public works should be made out with the idea of stabilizing labor conditions by absorbing unemployed labor and should not make such demands on labor supplies as would cause a competition of public employment with agricultural or industrial needs for labor. Such competition it seems would result in an artificial demand that would unbalance wage schedules. Such public employment should be at fair wages, however, which should serve as actual compensation for services rendered and not be in the nature of charity or unemployment insurance.

The idea of assuming or undertaking public works at this particular time is especially commendable and should be in the hands of the best qualified men who

can be found to take charge. If carried out with the intention of really serving the people and doing it economically as a business proposition, there is everything in favor of its being undertaken and started promptly. The unfortunate feature of unemployment is that the people affected are almost always those least able to provide for enforced idleness and it is a good deal better, both morally and financially for the community to employ such labor at fair wages and receive services in return, than to permit their support by either public or private funds, because in either of these cases, the public pays and it is better both for the public and for the workman that he give something in return, and the more nearly even the exchange the better will be the feeling on both sides. So we say again, we need public works and the undertaking of needed public improvements is particularly to be encouraged at this time so as to absorb our surplus labor, but we insist that it is not right in organizing public works that the people's money be wasted.

FORTUNES IN RAG-PICKING.

We ordinarily think of the rag-picker as a person of very humble estate, and frequently think that we are conferring a favor on, if not giving actual charity to, the gentlemen of the rags, bones and bottles brigade, when we sell our rags and waste paper for a few cents.

A recent despatch from Washington states that rag-picking and the collection of old paper, scrap-iron and other waste represent an annual turnover of more than \$2,000,000,000. It is further stated that there are more than 400 millionaires in the United States who have made their fortune in the rag-picking business. Among men in war work with the Waste Reclamation Service of the United States is a Harvard man who gave up a position worth \$10,000 a year to serve the Government, and is now going back to his rag-bags and waste sorting business.

From the enormous number of grades and vast quantities of this material that come into the various paper mills making many kinds of paper, one can readily appreciate the size of the business that must be maintained in order to supply the demand of just the paper mills. The paper mills, however, take only a fraction of the waste that must be collected and sorted. To go into the whole field would take many pages, but we may briefly indicate a few of the more important features. In the first place

we have the fine paper mills using only new white cuttings of linen and cotton, then we have those making the next cheaper grades of rag papers which make use of colored rags and soiled whites, then we have the mills that are equipped to use the rags which cannot be efficiently bleached, and finally the felt manufacturer who uses the cheapest of the rags that go into the paper mill. In another class are the mills which use waste paper, and here again we have a gradation of the mills making such papers as a fine white printing, or a good grade of bond and ledger, which take either soft white cuttings or hard envelope cuttings, and the like, we have mills equipped to take white printed papers containing a high class stock, and we have cardboard mills that take the lowest grades of wastes.

Besides the paper mills we have the textile industry, which uses enormous quantities of the woolen or mixed rags that are of no use in the paper mill, and from them make a large part of the woolen garments that we wear. In fact, if it were not for recovered wool it would be impossible to make more than one small wool garment for each person. Then there is the enormous industry dependent upon the collection and recovery of old iron, and there are also the fertilizer and soap industries, which to a considerable extent rely on the greasy and boney materials that are recovered from garbage, although these hardly come into the field of the rag-man. Another phase of the industry which has become very important of late is the recovery of the tin from waste cans.

And so we see that what looks to be a very lowly job turns out to be a very important factor in one of our sources for the supply of certain raw materials.

POOR JOHN BULL.

England is having a rather difficult time getting settled. John Bull's family has been through a most difficult experience, and the danger in some respects is not yet over. From what we read, the paper industry is about as completely unsettled as can be imagined. There is apparently no definite idea, collectively, of what is wanted. Restrictions are removed, but seem to be still in effect. Mills have bought supplies, not yet delivered, at prices that obligate them to costs greater than the present quotations on finished paper. Price-fixing has apparently prevented the accumulation of profits to meet this condition, which all thinking persons knew was sure to come. Paper mills want pulp on the most favorable terms, and some want all foreign papers excluded till the industry is again working to capacity, while others want a protective duty on imports. We can readily see the force of the argument for re-establishment, but we feel that Canada has a right to a preferential call for pulp and for such papers as British mills cannot supply at present.

The Industrial and Educational Press, publishers of the Pulp & Paper Magazine, have an official seal. He, she or it, was caught off the Nova Scotia coast and given to Captain F. W. Wallace, who served on the Canada Food Board. He is the editor of the Canadian Fisherman, published by the same concern. The seal was presented to the Press last week by Captain Wallace, and was christened Admiral Beatty, ye editor assisting in the ceremony. Beatty has a little ocean all to himself in cool waters of the spring-fed pond on the grounds of the Garden City Press. He is a gray seal, about four feet long. Someone started the story that there was a mermaid in the pond.

An English contemporary says: "An improvement in the quality of Canadian "news" is reported. It is said to be whiter and firmer, and without the greyish-brown look which distinguished it during the war years."

Winnipeg still has visions of a municipal paper mill. At a meeting next Monday a committee will be appointed to gather information. If the necessary by-law is passed, it is expected that work will begin next winter. Some people think the "City fathers" are in their second childhood.

Italian paper makers are alive to the need of technical training for those who will occupy positions of responsibility in the operation of the industry. A one year course has been established at the Institute of the Royal Experiment Station for the Paper Industry, at Milan. Special courses are given on the theory of the industry and facilities are afforded for analysis and other laboratory work in connection therewith. Work began in November, according to predictions in L'Industrie delle Carta e delle Arti Graphiche for October.

It looks as if Ontario children will be obliged to attend school until 16 years of age, and to continue a shorter term each year until the age of 18. Provision is made for proper instruction in the localities affected. It begins to look as if Quebec will be importing brains for some time to come unless there is more encouragement given to public instruction.

If possible, the machinery should be so planned that the directions of the belt motion shall be from the top of the driving to the top of the driven pulley.

The Navy League of Canada is issuing a series of educational leaflets on the British Navy. They will serve to show why and how Canada should support the sea force of the Empire. The titles of the parts received are—Policy of the Navy League of Canada; Heroic War Work of the Merchant Marine; British Navy and World Freedom; British Navy in History. Each is written by a different authority.

How to Determine the Composition of Paper¹

By E. ARNOULD

We are on the eve of resumption; in our paper mills young managers of manufacturing who hope to resume their places with those who having been trained since the war are destined for the career of paper-maker. I propose to write now, for their benefit, a page of information that may prove serviceable to them on the interesting question of determining the composition of paper. The first condition of success is to learn and to know thoroughly all the pulps employed, their particular qualities as well as their defects and the properties which distinguish one from another.

I have already discussed in the technical reviews (and I still keep this work complete at the disposition of those interested) the varieties which constitute an indispensable record for those occupied in the industry and especially the superintendents of mills.

Furnishes are made of all descriptions, under various forms, just as the doctor does, who combines a number of substances, rich in a certain therapeutic property, in quantities of suitable proportions for the purpose of effecting relief or a cure in the case of a patient afflicted with a duly verified disease. The operation of papermaking is conducted somewhat in the same manner, determining the furnish by the mixture of different materials, which combinations may be simple or complex.

For ordinary papers, the furnish is, of course, very simple and need practically consist of but one kind of pulp, selected for its satisfactory quality and low cost. Thus for the manufacturer of newsprint and similar kinds, the composition is of the most elementary and simple character known: 20 per cent. of unbleached sulphite pulp; 60 to 70 per cent. of mechanical woodpulp; 10 to 15 per cent. of old papers, a small amount of mineral loading and rosin sizing. As in this class of paper, the weight is almost always uniform and rather light, the essential feature is to obtain a sheet of such strength that it will not break on a high speed machine. However, there are newspapers and newspapers, and to quote an extreme I may mention the New York Herald for which a higher degree of whiteness is demanded and such strength in the sheet as will allow the reader to hold it unfolded, without its giving way.

There exists in the paper trade, a very national rule to the effect that the degree of whiteness shall always be proportional to the selling price. Consequently the tint of a paper, even its coloring, may require in the furnish the employment of more or less of bleached pulp, of finer pulp of a special coloring, care in beating or pulping, more or less suited to the quality and the price.

This means that between these two qualities of newsprint there will be a scale of intermediate kinds of furnish, a simple choice of pulps.

But when we have to do with fine, semi-fine or special papers it is quite another thing. The composition is complicated by more numerous elements,

in strictly regulated proportions in order to obtain papers possessing certain qualities and properties demanded by the customer or in their use.

All the science of the papermaker must be displayed in all the different cases, according to the precepts of the art and all the resources which the variety of pulps placed at his disposal. In some fine papers only rag-pulps are used, sometimes with the addition of substitutes treated chemically, or fine paper wastes of the same kind. These may be found in the collection of all the rag pulps commonly employed, about thirty-five different kinds, which can compose by themselves almost all fine papers. Some kinds of rag pulps may be substituted one for the other in the furnishes, on condition that the sorting or picking has been carefully done and that care has been taken in the preparation, in view of the change.

The study of the preparation of these pulps is a very tedious one and in regard to their employment, it in addition requires a knowledge of the qualities of each kind, and a calculation of their yield and net cost.

Complete knowledge of this subject is difficult to acquire because it is very rarely that a paper mill uses all the kinds of rag pulp, old and new, and in addition all the stuff of flax and hemp and fibre wastes.

When a superintendent, the best qualified in a mill to make useful researches by the analysis of that which the type of paper to be reproduced contains, recognizes, as is commonly said, a salad of pulps of all kinds in a paper, the properties of which seem, with certain exceptions, errors in principle, the ignorance of precedent should be very evident.

There are formulas that are quite normal or comprehensible but suppose there is found, in a single furnish, rag pulp, chemical woodpulp, mechanical woodpulp, a little chemical poplar pulp, straw, or esparto, well this is certainly absurd and contrary to all logical practice.

Before any other consideration of price, of supply, of any difficulties whatever, the choice of the pulps which are alone suitable for the composition of a fine paper should be fixed, in order that the quality, the whiteness, the strength, the flexibility, the weight, the opacity, the feel or the inertness will be considered by the nature and characteristics of the pulps introduced. The price paid to the mill should never be the cause of delaying this operation for it is only logical, it is a result of the conditions prescribed and almost always demanded by the customer. In any event, it is unwise for a manufacturer to bind himself to a stated price, before he has completely informed himself as to the components that should enter into the type to be reproduced. Mistakes are costly and for this reason it is necessary to be careful. I have known a skilled salesman, of forty years experience, to send me an order for very white paper, at a price not very high, without noticing that the sample was couched on both sides with a coating of 8 grams of barium sulphate. However, if it is agreed formally, without reservation, to reproduce any sample of paper at a stipulated price, there should be no hesitation, it must be made, as nearly like as possible in all its features, even if money be lost on the order. If there is quibbling,

¹Translated for Paper from *Le Papier*, Vol. XXI, No. 11 (1918), pp. 181-185.

or cheating, if it is made nearly, there is exposure to a call for accounting, for possible discount to the dissatisfaction and loss of the customer. In such a case, it is best to inform the customer that a mistake has been made as to the quality and first cost of the paper but that if he will not agree with the evidence, you will honor your agreement all the same.

Do these remarks not indicate how necessary, how indispensable it is to know from the ground up, all the pulps and to be able to properly analyze a paper? In the case of a microscopic examination of a sample of paper to be reproduced, there is room, in most instances, to be guided by the composition of the sample, but it is not always advisable to follow it blindly without consideration or misgiving. The observer, after the verification of his qualitative and quantitative analysis of the different raw materials, should seriously consider the presence and the proportions and not make a final statement in a definite way until fully convinced and assured.

It often happens that a shortage of pulp at the mill compels you to set aside the principles above commended but for once it does not do to act lightly, because substitution in this material is a very delicate matter and demands, as in the operation of counterfeiting, rather more knowledge and ingenuity.

I will take up the actual work of the superintendent preparing the furnish of a new paper. Of what importance is the style? There is always room to make contrasts, to make comparisons between the sample to be followed and other, similar papers, already made at the mill. The comparison will furnish information as to the whiteness, the shade, the firmness to the touch, the sizing, the calendering, the feel, the thickness, the opacity and the flexibility. These data will have no other value than for the eye; the touch, the examination of an observer will be based on experience and long practice in this style of examination.

For the benefit of the paper a good superintendent may be satisfied with this simple examination, he may estimate the proportion of mechanical pulp, if there is any, and the quantity of mineral loading present. But if the paper departs from the regular qualities there is no means by which he can inform himself exactly, except by microscopic analysis of the character and quantities of the pulps he should employ. I again insist on the imprudence of copying and adopting as a whole, the result of the analysis of a previous sample, for the good faith of the manufacturer may be deceived and the product supplied be in complete contradiction with the principles and the price of the paper. It therefore seems evident that it is necessary to know how to make a complete and exact analysis of a sample of paper and to be keenly on the alert for the more or less dishonest practices made use of under the name of competition. I would advise young foremen, who lack this knowledge to take the necessary lessons, in order to perfect themselves and acquire, by practice, the faculty of getting through a matter advantageously under all circumstances.

There are still manufacturers who, working by empiricism, do not believe they should accept this advice and who, continuing on empirical estimations, to cut off all these instructive questions of manufacturing, finish by bearing all the consequences. But this is a serious mistake, an error of routine or of foolish pride, for all this opposition and this obstinacy sooner or later is prejudicial to the progress of their business and the confidence of their customers.

After a long experience in the industry, I allow myself to remark to those who wrap themselves in routine and the least effort, that they act so only because of their lack of the true science of the business and the confirmation of their practical knowledge. It is the same with those beginners who will not assume the sacrifices of a systematic apprenticeship of sufficient duration and who believe themselves to be valuable men, familiar with and consummate in the manifold difficulties of the business of paper manufacturing. No, whatever the man may be, whatever may be his intelligence, his theoretical instruction, his activity, his changing about from mill to mill, he requires more than ten years of constant work in the mills to be able to solve the problems of industrial responsibility that rest on the superintendent of a paper mill and at the same time hold the confidence of all those who surround and assist him.

Thus for instance, a very small detail among the visible and exterior exactnesses in examining a sample of paper that is to be reproduced and which is of great importance in determining on a furnish, is to judge accurately of the whiteness of the original pulp, that is to say the actual state of the paper in question without any coloring. This recognition, this starting point, is not only necessary in order to give in the composition, the right percentage of white, dull or unbleached pulp; but it indicates what will be the proportion of coloring to be added to the pulp to produce the tint of the sample to be copied. The incapable, the dubious papermakers, depend only for a decision on a preliminary attempt made on the paper machine, but then, what of the delay, the time and money lost? Still it is sometimes wise, even indispensable, to have recourse to the test on a small scale, but only when dealing with important orders with special quality papers, with watermarks of exact dimensions. This study of the basic pulp of a paper, is incited only by intuition and a lengthy experience in these investigations as, also, the acquisition of the sense of touch of paper, which conveys information as to all its physical characteristics.

Close to a good superintendent who is open and communicative, the young foremen assimilate, as rapidly as possible, all these means of determining the basic state of the pulps by his methods of observing, of judging and utilizing all that is explanatory, of the contents of the furnish and the change it must undergo during beating, coloring and working on the machine. Those among them who are vain, who find everything simple and easy in carrying on the manufacture of paper and who attach no importance to this study of detail, remain, in spite of age, managers with superficial and incomplete knowledge. Better than that, they teach you that the love of the trade, confidence in one's self in practice, in theory, in thoughts and actions, then the personal feeling that results from enlightened experience, without ceasing to be reserved, without ceasing to be refreshed, more and more rational, never becoming in any instance disagreeable, or causing offence except to the ambitious who believe they know everything and that in everything they can touch the hand of the master.

A mill superintendent, who in all fairness, appreciates as should be, the goodwill and the individual capacity of each of his subordinates always finds himself advantageously seconded and gets the best work out of them, to the benefit of the mill he is connected with.

I will imagine a superintendent preparing the necessary studies to determine the composition and the price of an order of paper, of which a sample has been sent him for exact reproduction. I will enumerate the factors of observation in the order known.

1.—Examination of the sample and of all its physical characteristics, to determine the class of paper to which it seems to belong.

2.—According to this class, comparison with similar types at the mill, to determine the basic pulp, its whiteness, its weight and its coloring.

3.—According to its hardness, its strength, its stiffness, or on the other hand, its flexibility, determining the method of beating, short, long or smeary.

4.—Determining the degree of sizing.

5.—If dealing with a special paper, I submit the sample to the action of reagents for starch and for gelatin, to determine their presence and proportion.

6.—If, on the contrary, it is a common paper, of mixed composition, I investigate by reagents, the character and percentage of mechanical pulp or its entire absence.

7.—If the paper is coated, I examine the two sides and observe the grain and its fineness. If it is calendered, I note the surface finish and investigate the mathematical handling which is an important indication.

8.—I incinerate 2 or 5 grams of the sample, in order to ascertain the exact residue. Examination of the ash enables me to determine the nature of the loading and to decide as to the excellence of the choice of the substance or on the advantage there would be in changing this substance for reasons of quality or price.

9.—I determine, by means of comparison sample of the same weight, same quality, same calender finish, the degree of opacity or of transparency of the type to follow.

10.—I make microscopical analysis, qualitative and quantitative of the fibres, and after consideration and verification, I note the percentage of the pulps to within 5 per cent.

11.—If the paper should possess a given tearing length or absorptive property, as in blotting paper, or filter paper, or meet the conditions expressed in the order, I verify them, as far as possible from the sample submitted.

All this work has taken half an hour. Informed, or at least very much enlightened on all these points, I reproduce the furnish in all its details. If I control the pulps, all is well; in the contrary case, I make substitutions by means of those I possess and which are suitable and I determine the cost price to the 100 kilograms (200 lb.) gross yield of paper.

However, at the moment of apportioning the percentage of each pulp, in bulk, according to the data of the microscopical analysis on the summary examination, it is always well to reflect whether we are not deceived or have not made a mistake and only to arrive at a final decision in conformance with the rules of approximation previously determined by experience. Thus, in all papers there is a certain percentage of strong pulp for the framework of the sheet and another which we term filling pulp or loading pulp, from which there should logically be but little deviation and which skilled practice brings within a trifle. It is the same with the quantity of opaque, flexible and other pulps as well as the quantity of loading to be introduced so as to retain 10, 20 or 30 per cent.

in the finished paper. In the course of manufacture, the beaterman should never lose sight of what method of beating, what duration of this process should be followed because there is a close relation between the composition and the mode of beating, of which the particulars and the careful requirements should be entered on the beater's record sheet.

These observations, for the most part conventional in form and scope, stipulated by the superintendent are like transmission of his ideas, of his conception of the work to be done, to be regulated and followed as much by the foreman as by the beaterman and even the machinetender.

Let us suppose, for instance, that there is to be undertaken the manufacture of royal record of 20 kilograms, to be of 123 grams to the square meter:

BEATING RECORD

X Number of order, H. Number of Mill order.
Beating Engine No. 1

3000 kilos, white, slightly blue, calendered	50x65	of 20 kilos,	
500 sheets per ream.	Weight per square meter:	123 grams.	
Bleached Sulphite, K H.	4 vats of 20kg.	= 80k.	@ 40 fr. 32.
Bleached Soda pulp, K II.	3 vats of 20kg.	= 60k.	@ 38 fr. 22.80
Alfa pulp, bleached	1 vat of 18kg.	= 18k.	@ 42 fr. 7.50
Linen No. 3, bleached	1 vat of 18kg.	= 18k.	@ 50 fr. 3.24
Ledger broke	1 vat of 16kg.	= 16k.	@ 30 fr. 2.56

	to vats	192 kg.	68.10 fr.
Kosin size	300 liters (strained)		3 fr.
Sulphate of alumina	100 liters (strained)		1.50 fr.
Kaolin with starch	150 liters (30 kg.) @ 8 percent		2.50 fr.
Coloring, Ultramarine blue			120 fr.

Method of beating. Not to be beaten too hard at the beginning for an hour.
Duration. Four hours (progressive).
Smeary beating leveling off. One hour.
Observations. Strong, hard paper, stiff not breaking on the fold.
Cost Price.

Wood fibers and others	174 kg.	68.10
Rag fibers	18 kg.	2.50
Kaolin	30 kg.	3.
Rosin size.		
Sulphate of alumina		1.50
Coloring		1.20

	Calculated on yield of paper	76.30 fr.
Normal waste on woodpulp		8 percent
Normal waste on strong linen pulps		30 percent
Normal waste on kaolin and starch		45 percent
Production.	174x8 = 138k. 920 or 174—13,920.	100 kil.

Production.	100	
	18x30 = 5kg. 400 or 18—5,400	12,600 kil.

Production	100	
	30x45 = 13kg. 500 or 30—13,500.	16,500 kil.

	Yield of the beating	189k. 100
189 kg. 100 cost 76.30; 1 kg. costs	76.30	
	189.10	
100 kg. cost.....	76.30x100 = 40 fr. 34.	
	189.10	

In accordance with this method of calculating the cost price, there is to be added to this figure of 40 francs 34 per 100 kilos, the cost of packing, of transportation, the discount and all other expenses of manufacture and general expenses and there is thereby obtained the net price at the mill per 100 kilograms of saleable paper. I have, of course, simplified all the calculations of cost price because our only purpose in this article is the manner of properly determining the composition of the paper.

In the case of an order including several sizes of different weight per square meter, that is to say, the smallest under 100 grams and the heaviest above this weight, it will be in order, so that the paper may have the same qualities and properties required to make two distinct furnishes. Obviously the furnish of the lighter sort is more complete in the beater the duration of beating is slightly longer, the charge in-

duced slightly increased, on account of loss and is raised more as the paper to be made is lighter.

It is therefore of the greatest importance, in preparing different furnishes for the same paper of various sizes and weights, that the greater the departure from the thickness of the sheets the greater the variation of the weight of the pulp in the furnish by beating, as well as the mineral loading introduced, which normally decreases in weight in proportion as the weight per square meter of the paper is increased.

It may be understood that in a charge otherwise equal in two papers, that which is the thickest is much more brittle than the thin, the reason for which is, that the thicker retains, in the course of manufacture, more mineral substance than the thin paper. This confirms what I have said before that for two papers of different weights, one thin, the other thick, both before being finished should contain the same percentage of residual charge, and that which is the thinnest should be preferably the heavier loaded.

For all special papers, fine and superfine, the furnish is sometimes very troublesome to make up because the working orders are sometimes transmitted by administrations arbitrary in demand or by persons or department heads, who have arrived at an opinion in more or less good faith by reading some treatise on papermaking or through the counsel of some unscrupulous merchant, which they have only partly understood. The following are some instances of this character:

1.—Very great whiteness is demanded at a price that does not admit of the use of first class pulps.

2.—It is stipulated that the paper shall be very white and at the same time very opaque and without loading.

3.—That the paper should possess great resistance to longitudinal tearing, with the provision, that the cross-wise tearing resistance shall be equal to at least 60 per cent. of that of the length, or therefore the average of two lengths.

4.—Mineral loading is to be tolerated in paper required to be of great strength, at the same time it must not be knowingly introduced.

5.—Much handle is required on a paper which may be loaded according to desire.

6.—You are notified that the tint must not be transient, must not change on exposure to the air, to the light, or to alkaline or acid baths, but no care has been taken to inform you that this priced coloring calls for an additional expense.

7.—It will be impressed upon you that the paper should display the same resistance to tearing in two directions or should be similar in one direction to the other, which is almost impossible.

8.—It may be demanded that a paper shall have a very pronounced grain on one side, but not on both sides of the sheet or that the grain be absolutely the same on both sides.

9.—An exactly similar finish for both sides of the sheet is not easy to obtain, at least it will not be very pronounced, so that the paper can pass through the dry calender rolls at the end of the paper machine.

10.—For some papers it is demanded that they shall be absolutely free from particles of iron or of copper, from free acid, from odor, from traces of chlorine, etc., at the same time all these conditions call for very exacting care in the preparation of the pulps that are always inadequate.

There are thus innumerable surprises insinuated into the specifications that may accompany an order, and which it is very prudent to recognize thoroughly, study well and state very exactly to avoid complaints when acceptance of the order is refused.

There is a general rule, which, aimed at the responsibility of the work in a paper mill and which for the superintendent, is positive; that is, that he does not assign to one foreman any more than to his subordinate, whatever may be the reason, to manufacture an order of paper of shade or quality inferior to that of the sample supplied and which is to be followed. It is quite a matter of course in such a case, that the mill manufacture this order with little or without profit rather than expose itself to a claim for accounting, the dissatisfaction or loss of a customer.

It is therefore wise, in case of an error in the furnish, to resort to every means of correction that remains possible, or if this causes too much loss of time, to use to the best advantage, the pulps concerned for another, almost similar paper. The considerations relative to the fixing of a cost price for all orders, whether before or after manufacture, have much in common with the contents of the furnish, but I should make them the object of another operation. I should add that the good combination of the pulps in the beating engine plays an invaluable part, first for the beating and afterwards for the work of conversion on the paper machine.

There are pulps which cannot, by any means, be beaten together; these are for instance, very hard linen pulps with the strong sulphite pulp, but, on the other hand, it is quite possible, with soda pulp. I do not explain here the reason, each may seek it for himself, the study is very instructive.

Does it seem logical to beat, at the same time, pulps having fibers of altogether different hardness and strength? Is it not taking the risk of seeing the most tender kind reduced to dust while the hardest will be barely shortened? It is therefore proper, either to beat them separately or at least, not to introduce the most tender into the beater until the other has been reduced to a certain extent, that is to say, at the half or three quarters of the beating period.

At present there is no production of wood-pulp or paper within Siberia; the paper market of Western Siberia is supplied chiefly from European Russia and Finland, while Japan has recently developed an export of paper to Eastern Siberia. Three or four years ago an attempt was made to start a small paper and pulp mill at Tomsk, but the project was abandoned, presumably for lack of capital or because of the difficulty of purchasing equipment from abroad. There appears to be an attractive opportunity for the development of a pulp and paper industry in Western or Central Siberia for the supply of the domestic market, and some progress in that direction will no doubt be made within a few years. There are also possibilities for the wood-pulp and paper industry in the maritime district of the Russian Far East, but in view of the increasing production of Japanese pulp and paper in Northern Japan and Corea present commercial prospects of such undertakings in Eastern Siberia are now uncertain.

President Bothwell on the Pulpwood Embargo.

"Removing the restrictions from the exportation of Canadian pulpwood to the United States would not result in reducing the price of newsprint paper to American consumers although it would reduce greatly the sale of Canadian-made pulp and paper in the States," said J. A. Bothwell, president of the Canadian Pulp & Paper Association, when asked what effect the proposed removal of the embargo on export of wood cut from Crown lands in Quebec would have upon the industry here. Mr. Bothwell is vice-president and general manager of the Brompton Pulp and Paper Company, which operates mills on both sides of the line, and is therefore in a position to give an impartial opinion.

"In a statement issued by the American interests which are openly advocating the repeal of the export restrictions, it is said that prior to 1910, when the importation of pulpwood from Canada was unrestricted, the average cost of prepared wood at the American company's several mills was about \$10 a cord. It has since risen to as high as \$20.20 a cord. The argument is advanced that if Americans had the right to come into Canada and cut wood without restriction the price would come down and cheaper paper for American consumers would result," said Mr. Bothwell. "In my opinion the high price of pulpwood in the States is not due to restrictions on exports from Quebec. The cost of pulpwood in Canada since 1910 has advanced almost to the same extent as it has in the States, the dominating factors being abnormally high wages, excessive cost of supplies, lack of efficient labor and increased freight charges. These factors would not be affected by removing the restrictions on export. The wood would still cost as much as it does to-day. The only result would be that a large proportion of the wood now being manufactured into pulp and paper in Canada would be exported to the States and used to keep American mills in operation. Some Canadian mills would either have to close up or reduce their output, capital invested in the industry on the strength of the export restrictions would suffer, the demand for Canadian labor would be reduced and Canada's international trade account get a further setback.

"The American interests have issued an appeal to the American Newspaper Publishers' Association, which is meeting in New York this week, in which they ask Congress to approach the Government of Quebec with a view to securing the removal of the restrictions complained of. In their appeal they say:

"Unless the present opportunity is grasped, the future of newsprint manufacturing lies in Canada under foreign laws and with the industry unresponsive to our regulations and free from its share of taxes to our Government.

"Unless an adequate supply of pulpwood is assured, American production will gradually disappear, the price-regulating competition of American mills will cease to be a factor in the market and the Canadian product will reach whatever price level the law of supply and demand may force it to."

"I do not know," said Mr. Bothwell. "What effect such an argument may have upon the interests to whom it is addressed; but it seems to me that con-

sidered from Canadian and particularly from the Quebec point of view it affords the best sort of reason for allowing the present arrangement to remain undisturbed. Our authorities certainly will not want to do anything that will prevent Canada from becoming the dominant paper-producing country of the world."

PAPER AND PULP CONTROL IN FRANCE.

A French Ministerial decision of March 1st establishes a temporary control on all imports of paper pulp, paper and cardboard other than that used for newspapers. All such imports will henceforth be made exclusively by the Comptoir des Pates et Papier, 154, Blvd. Haussmann, Paris, or for their account, by the State. The Minister of Industrial Reconstruction, in agreement with the Departments concerned, will fix the prices at which the goods in question are to be distributed by the Comptoir, as well as the quantities and sorts of paper to be imported. All import licenses will be made out in the name of the Comptoir and the basis of calculation for their re-sale will be a co-efficient of the foreign products, as compared with the national production. The Comptoir will likewise enjoy preferential transport arrangements and will receive a commission on business transacted. The measures referred to likewise apply to import licenses issued prior to the publication of the present decision except as regards cost price.

The decision under review states that the measures referred to cover a period of three months, subject to extensions for like periods of three months, but must in any case terminate at latest on December 31st, 1919.

MAKING PULP IN QUEENSLAND.

It is stated that the work of making paper pulp at the Queensland Pine Co's mill at Yarraman appears to be progressing satisfactorily. The Acting Director of Forests (Mr. Swain) has informed the Minister for Lands that the company is observing the terms of its agreement in regard to the manufacture of pulp from tops of pine timber. The Minister for Lands states that judging from reports made by the Director and reports from the South, the prospects for this industry are very promising.

JAMES BEVERIDGE IN ENGLAND.

Mr. James Beveridge, who was associated with several leading British paper mills as a chemical engineer and pulp and paper expert before settling in Canada in 1901, is at present on a visit to England, renewing acquaintance with his many friends. Mr. Beveridge was formerly associated with the Northfleet Paper Mills, Thos. Owen and Co., Ltd. (Hyjerpen Mills, Sweden), A. E. Reed and Co., Ltd., and Olive and Partington, Ltd., and is widely known throughout paper trade circles. He has been connected with several important Canadian enterprises.

Strong representations are being made by many sections of the trade to get in the thin end of the protective wedge. Even the pulp dealers have now joined in the outcry, though as likely as not they will be the first people to object to it when it comes into general use, for some of them, at all events, will suffer if a preference is given to Canadian pulp.—World's Paper Trade Review.

CUTTING METHODS ARE KEY TO FOREST WEALTH.

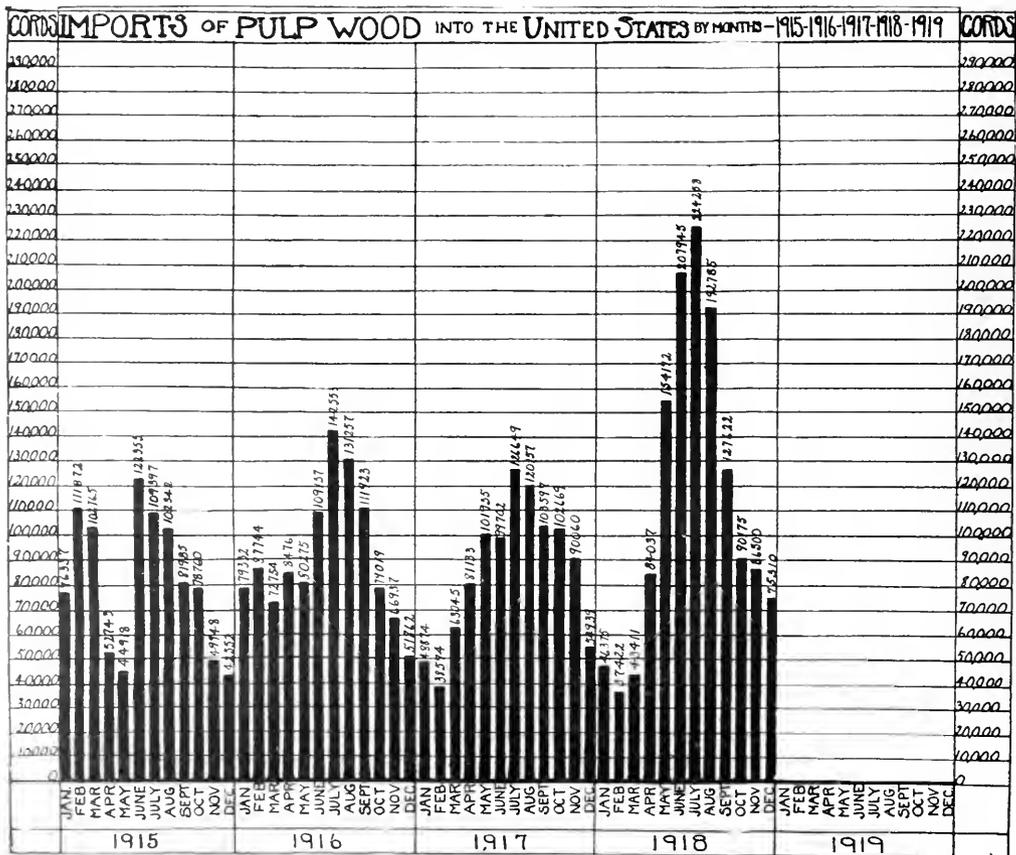
It is of the greatest importance that we fully realize that our virgin forest resources are by no means inexhaustible, but that they can be made so by the exercise of proper supervision over the methods of cutting. This means the practice of scientific forestry, and this, in turn, involves the employment of large numbers of well-trained and thoroughly-experienced foresters in the supervision of woods operations. These men are simply not to be had at present, but, with the close of the war, considerable numbers will be available. Forestry practice in Canada may be expected to receive a decided impetus with the return of the men who are now rendering such valiant service in Europe in producing the timber supplies essential to military operations.

British Columbia, Quebec and New Brunswick have provincial forest services, whose duties include supervision over cutting operations on Crown lands. In the West, the Dominion Forestry Branch has the same responsibility, in regard to Dominion forest reserves. Thus, in each of these provinces there is al-

ready at least the beginnings of a technical forest administration, in the hands of men educated and trained particularly for such work.

In Ontario, on the other hand, the Provincial Forestry Branch is concerned primarily with forest protection, forest nursery work, etc., but has no direct administrative connection with the enforcement of cutting regulations on Crown timber lands. On Dominion lands in the West, similarly the Dominion Forestry Branch has no administrative connection with cutting operations on licensed timber berths or on unlicensed lands outside the forest reserves. In Nova Scotia, there is, as yet, no technical forest service at all, though the Provincial Government has for some time had the matter under consideration.

Until technical forestry methods, based upon the best business considerations from a long-time point of view, are put into effect on all the non-agricultural forest lands of the Dominion, we shall be mining our forest resources, rather than treating them as a crop, and shall therefore be sacrificing the permanent welfare of the country for the sake of a temporary advantage.—C. L.



Totals . 975,974 1,097,577 1,031,334 1,370,012

This chart seems a fairly good indication of the dependence of American mills on Canadian wood. As this is largely obtained from settlers, it means a heavy drain on their future resources, especially where cutting is greatly in excess of the need of land for agriculture, and where it is not properly done.

SPANISH RIVER IMPROVEMENTS.

In a recent number of the Spanish River News there is an interesting series of pictures showing some of their recent improvements in their plant at Espanola, Ont. An extension of brick and concrete contains nearly 10,000 feet of concrete floor and an equal amount of wood floor area for the use of the finishing department. The loading platform is provided with hanging roofs so that there are no obstructions to interfere with trucking.

A new penstock is being put in together with the accompanying water wheel and the generator which it drives. This is unit number 4.

The Locomotive and Crane House has also been built to house this part of their equipment.

Between the Drum Barker Room and the Wood Room a new barked wood conveyer has been installed. The conveyer is of the 6 chain type for conveying the barked wood and a new wood chute has been built to the Pulp Mill.

In the Drum Barker Room, drums numbers 2 and 3 have been raised and number one will also be placed on a new level.

PUT HIM IN A BEATER.

An Irishman with an extra large stomach went to see a doctor to learn what could be done towards having it reduced. The doctor looked at him with a very professional look, and then at the large stomach, and then said: "You will have to diet" (dye it). At this the Irishman jumped up, much offended, with the remark, "Pwhat do yez think me stomach is — an Easter egg?"—The Pulp Press.

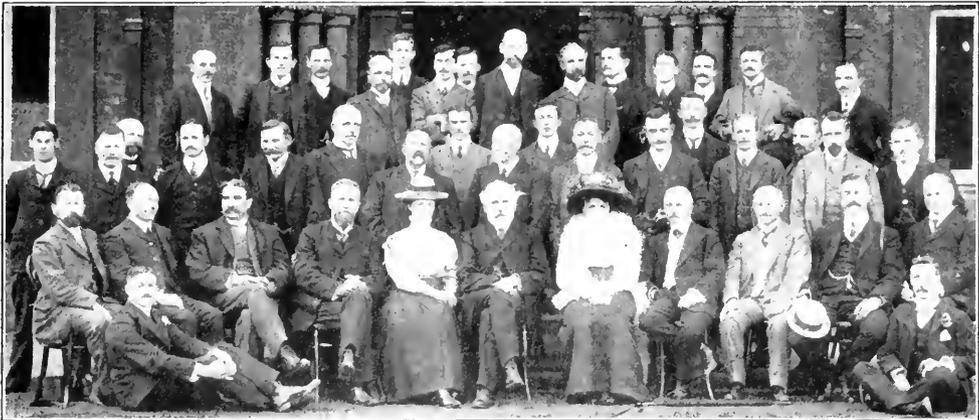
GIFT OF WOODLAND TO ONTARIO.

A most unique piece of legislation was introduced in the Ontario Government during the past week, when Sir William Hearst, Premier, presented a bill to make possible a private forest reserve in Waterloo county, which has been set aside by Mr. Snider, of St. Jacobs. It is provided that the trees may only be cut with the consent of the government. It was stated that the donor of the woodland to the Crown had created a precedent of private co-operation with the policy of public reforestation and the Legislature expressed its appreciation of the public spirited gift.

NEW REGULATIONS REGARDING WINDOW ENVELOPES.

The post office department has issued new regulations in regard to window envelopes about which much complaint has been made in the past with respect to the illegibility of firms' names and addresses. The regulations go into effect on June 1st next, and among other provisions is one that such envelopes shall bear the name and address of the sender, which shall be placed in the upper left hand corner on the address side. The stationery used must be white, and it is announced that window envelopes not conforming to these and other regulations shall be unmailable.

The Canadian Barking Drum Co., Toronto, has taken over the exclusive right to manufacture and sell the American barking drum in the Dominion of Canada. Mr. B. Branch, who formerly had charge of the wood-room operation in a prominent Canadian mill equipped with these drums, is in charge of this business.



Picture taken on the occasion of the visit of "Der Verein der Cellulose und Papier Chemiker" to Daily Chronicle Paper Mills, Sittingbourne, Eng., about ten years ago. (Courtesy of Mr. Fred Barnes, Shawinigan Falls). A number of distinguished persons are shown in the group. Reading, left to right, one sees: Seated on ground, Dr. Wrede, silicate size expert. On chairs, Dr. Klemm, paper chemist, Dr. Henry P. Stevens, author of "The Paper Mill Chemist"; Robert Donald, late editor London "Daily Chronicle"; Herr Schmidtmann; Frau Schmidtmann; Frank Lloyd, Mgr. Dir. Edward Lloyd, Ltd.; Fran Ferenczi; Mr. Fifoot, Mgr. "News of the World"; Herr Ferenczi, editor "Papier Zeitung"; the late Chas. S. P. Phillips, editor "The Paper Maker"; London. Standing behind chairs: Fred Barnes, chemist; _____, sub-editor "The Paper Maker"; _____, two managing directors, "Königsberger Zellstoff Fabrik" and "Norddeutsche Cellulose Fabrik" (Tilsit); the late Clayton Beadle, author, "Chapters on Paper-making," etc., collaborator with Cross & Buran on "Cellulose"; the late R. G. Hutchison, inventor of the Lloyd-Hutchison drive for paper machines, used on Walmesley machines; R. W. Sindall, author of "Technology of Paper-making," etc., etc., is the gentleman with the beard, standing at right of doorway, coat buttoned. Others in the picture are members of the staff of Edward Lloyd, Ltd., and others associated with the British and German pulp and paper industry.

HOW JACK CANUCK HELPS UNCLE SAM.

The New York Morning Sun, in a leading editorial article, under the caption "Canada our trade jewel," says:

"What is this marvellous Canada, our next-door neighbor and good friend, that it can come into our markets, war times or peace times, and buy from us as no other nation, population unit for population unit, begins to do? Where is there another to be prized by us as we should prize this staunch ally, opulent customer and near kin? How high is the limit which shall be placed upon the value of the relations between that country on the one side and our country on the other side of a thin boundary line stretching nigh 3,000 miles from the Atlantic to the Pacific?"

While the war waged we were astounded at the magnitude of Canada's part in it, with only some 10,000,000 inhabitants; at the men, the money, the supplies Canada sent over; at the materials Canada took from us to help keep the war machinery, the industrial machinery, the business machinery of the Dominion driving at top speed. But here is the war ended—ended four months ago; and what is Canada still doing in our markets? Only more and better than ever; that is all.

In January last year our exports to Canada went beyond \$50,300,000; but in January this year they topped \$55,700,000. How does that measure in our international trade?

Well, compare: All Africa bought from us in January only nine millions of dollars against Canada's nearly fifty-six millions of dollars. All Oceania took from us \$27,400,000; all South America \$52,000,000. All Asia, with many hundreds of millions of people, bought from us only six and a half millions of dollars more than Canada with its few millions of people.

Consider our exports to Canada for the seven months of the fiscal year ending with January. In the corresponding seven months preceding—all war months—we sold to Canada goods amounting to \$428,700,000. That was huge. Yet in the corresponding seven months ended with last January—some four and a third of them war months, and some two and two-thirds of them peace months—we sold to Canada goods amounting to no less than \$542,500,000.

Compare again: To all Africa our exports for the seven months, \$38,000,000; all Oceania, \$123,000,000; all South America, \$337,300,000; all Asia, \$475,400,000. Canada was sixty-seven millions of dollars higher than Asia and eighty-two millions of dollars higher than all Oceania and all South America put together.

Compare once more: In the seven months Canada bought from us a quarter of a billion of dollars more than Canada sold us. All Asia bought from us \$195,000,000 more than all Asia sold us. All South America bought from us \$121,000,000 more than all South America sold us. All Oceania bought from us \$10,000,000 more than all Oceania sold us. Africa, on the other hand, sold us \$6,000,000 more than all Africa bought from us.

In that crown of our foreign trade, in truth, Canada is the bright particular jewel. Not many years will pass, we may be sure, before in our whole firmament of international commerce Canada will be, among all, the shining star."

Of course, it is gratifying to have all that to spend,

but couldn't a little of it be spent at home? We owe the genial uncle a tidy account now, in spite of the fact that he is our best customer also.

MANY NEW COMPANIES GRANTED CHARTERS.

There have been an unusually large number of charters granted to new organizations during the past few days. It would appear as if the printing and publishing business is enjoying a large measure of prosperity, while a number of concerns are thinking seriously of getting into the pulp wood and pulp line.

A charter has been granted to the Thompson and Heyland Lumber Co., Ltd., with a capital stock of \$40,000, and head offices in Toronto. Wide powers are conferred upon the organization such as erecting, building and dealing in building material, acquiring lands, mines, minerals, etc., to manufacture pulp and paper; and to carry on business as manufacturers of and dealers in logs, timber, pulp wood, lumber, shingles, etc. The members of the company are James Thompson, M.L.A., of Havelock and Toronto; and E. R. Heyland, of Toronto.

The Toronto Times, Ltd., has been incorporated with capital stock of \$500,000 and head offices in Toronto, to print and publish newspapers, books, pamphlets, magazines, and to carry on publishing, engraving, lithographing, bookbinding, etc.

Another organization in the same line is the Charters Publishing Co., Limited, with a capital stock of \$30,000, and head offices in Brampton. The company is authorized to do a general printing business and to publish weekly newspapers. Among the incorporators are Samuel Charters, M.P.; J. E. Fullerton, and Clarence V. Charters, all of Brampton; and Samuel Wilson, of Weston.

The Peoples Journal, Ltd., with capital stock of \$10,000, and headquarters in Toronto, has been granted a charter to start, acquire, establish and print newspapers, journals and magazines, and to carry on the general business of publishing.

A provincial charter has been taken out by Matheson Products, Ltd., with a capital stock of \$100,000, and head offices in Matheson, Ont. The company is empowered to manufacture, purchase and acquire and trade in all kinds of goods, and also carry on the business of lumbering in all its branches, and to manufacture and deal in logs, lumber, timber, wood and pulp, and all kinds of natural products and by-products thereof.

British Possessions Exploration Co., Ltd., with a capital stock of \$40,000, and headquarters in Toronto, has been formed. Among the powers conferred are to carry on all kinds of exploration work and business, and to manufacture, sell and deal in lumber, logs, timber, pulpwood, and all other wood products.

Still another new organization is the Canadian Cork Board Co., Ltd., with a capital stock of \$100,000, and headquarters in Toronto. The concern is authorized to buy, sell and deal in all kinds of goods, wares and merchandise.

Coming nearer home we find J. A. Daoust, of Ste. Anne de Bellevue, P.Q., incorporated at \$20,000 and with general privileges, including the manufacture and sale of pulp and pulpwood. Propinquity to the office of the Pulp and Paper Magazine has nothing to do with the matter, as far as we know.

URGES PULP PRODUCTION IN FRANCE.

Following a report by M. Albert Crolard, the General Congress of Civil Engineers (France) has passed a comprehensive resolution embodying the ensuing points:—

(1) That the production of cellulose pulp be developed in France as rapidly as possible, using home and colonial resources, and that in the Peace negotiations the authorities obtain from our Allies — the English (Canada) and the Russians (Finland) — the establishment of an export duty on their wood destined for enemy countries (this duty not being applicable to the Allies).

(2) That more fir wood be supplied for the manufacture of paper through a more rational exploitation of the forests under State control, especially by regulating every year felling (as is done in several other countries) according to the needs of various industries (State services, timber, carpentry, packing, paper pulps, etc.), in order to avoid the jerks and surprises of the market.

(3) That the manufacture of fir cellulose carried on some years ago with firs of the Landes be resumed and perfected.

(4) That with regard to the aspen and poplar (especially the poplar), great progress be made in their production, following in this the example of Italy in her cultivation of the poplar by rapid growth.

(5) That the attention of the Minister of Agriculture be drawn to the great importance of this cultivation from the national point of view.

(6) That the mechanical wood industry profit from the development of electric power and utilize rationally the amount disposable at certain hours of distribution from centres of hydraulic power.

(7) That the production of alfa pulp be brought up, as soon as possible, to high capacity, at a price which will permit of its employment in the manufacture of papers suitable to compete with those at present imported into France and having the same properties, reckoning on (a) the development which has taken place owing to the war in factories making chemical products (hypochlorite of soda); (b) the widest exploitation of alfa fields, taking all precautions for their preservation and the organization of the raw material market, by the Governments of Algeria, Morocco and Tunisia; (c) the cheapest transport rates for N. Africa and across the Mediterranean.

(8) That with regard to chemical straw, the fall in the prices of chemical products produce the same auspicious development as for alfa.

(9) That the practical employ of Colonial fibres be determined by industrial experiments which fulfil the conditions necessary for their utilization (organization of the market at the loading place, transport, stocks). In this connection, all researches for the Colonies, at present divided among various organizations, should be centralized and completed so as to utilize practically fibres coming alike from direct collection and from the indirect waste products of industry.

(10) That the industrial study of all fibres be centralized in a single institute at once scientific and industrial in its organization; that the Paper School of Grenoble be fully developed (aided by State subsidies and grants from interested groups) by undertaking the manufacture of paper under the scientific direction of the Ministry of Public Instruction (Grenoble University), and that the Paper School be officially nominated to give information to the Ministries of

Commerce, Agriculture and the Colonies.

(11) That in this School every year industrial experiments be made with fibres not yet utilized growing in France or her Colonies, using adequate quantities and adopting varied methods of trituration in order to demonstrate to experimenters the special qualities of these papers, which for certain users, in spite of their higher net cost, are capable of useful application.

HOW GOVERNMENT HELPED PAPER MILLS.

During his recent visit to Canada and the United States, the Commonwealth and Victorian Governments' printer placed orders for over £100,000 worth of printing paper in about equal values in each country of origin.

Before leaving Australia, the printer was supplied by the Dept. of Trade and Commerce with an itinerary, suggestions as to sources of supplies of particular grades, and numerous letters of introduction to the proprietors of Canadian mills.

The Department received some complimentary letters from Canadian companies (who benefited by these orders) in recognition of the efforts made by the Trade Commissioners Service to render practical assistance to paper and other manufacturers in the Dominion.

If the initial bulk shipments are satisfactory, it is anticipated that in future the Federal and State printing offices in the Commonwealth will, to a much larger extent than hitherto, import a considerable portion of their requirements from Canadian mills.

KINDS OF PAPER JAPAN WANTS.

Mr. A. E. Bryan, Canadian Trade Commissioner, Yokohama, reports that there is a demand for nearly all kinds of paper in Japan. The attention of those firms wishing to find a market in Japan, is drawn to trade inquiries Nos. 560-564, published in number 793 of the Weekly Bulletin.

For the information of Canadian paper mills, it may be of interest to give the various paper sizes which are most acceptable to the trade:

Book paper of all kinds, 25 by 37 or 31 by 43.

Bonds, 18 by 33 (13 pounds up).

Greaseproof vegetable parchment, onion skin, etc., 20 by 30.

Account book papers, 32 by 44.

Kraft papers, 36 by 48.

News comes in various sized sheets or rolls.

WOODPULP IN CUBA.

Cuba uses a considerable quantity of woodpulp. This was supplied before the war chiefly by Norway, but for the past two years Canada has been supplying part of this demand, and with better shipping facilities, should be able to secure a large share of this business. There is no duty collected on woodpulp into Cuba.

NEW VICE-PRESIDENT, AM. PAPER EXPORTS.

Benjamin LeBree, Jr., until recently sales promotion director of the Parsons Trading Company, has become vice-president of the American Paper Exports, Inc., a combination for export trade of the leading American paper manufacturers.

The Salmon Lake Drive and Boom Association, Ltd., will probably erect a large wood and pulp plant at Lac au Saumon, Quebec.

Technical Section

MANY STUDENTS INTERESTED.

It is putting the matter conservatively to say that the Canadian Universities have never taken the interest in the pulp and paper industry that has been aroused by the action of the Technical Section. Last week there was published on this page, a letter of the secretary, announcing a number of opportunities for students to work in the mills during the summer. Already more than 45 students have asked to be placed. They come from Queens, McGill, Toronto, and Mount Allison, with British Columbia and others still to be heard from. They come in swarms. Mr. Dawe has had as many as 10 McGill students call on him in one day. Mr. Crossley, chairman of the Committee on Education, is assisting at Toronto. The students often wish to go in pairs. They are really in earnest about going into the work, and their enthusiasm is a rich promise for the future of the industry. The students are mostly chemical engineers or foresters. There seems to be a lack of appreciation of the opportunities for mechanical and electrical engineers on the part of both the university and the mill.

The movement is by no means one-sided, in fact, it can't be. The mills are showing a very keen interest. Several mills find themselves only just able to keep up with their agreement to take on returned soldiers who want paper mill work. The Technical Section wants to help this good work rather than hinder in any way by urging the student proposition, although hoping the mills will consider the building of a scientific foundation for the future. One mill wants to see a scheme worked out whereby they can make an arrangement to have a student return in successive vacations, feeling that he would not be of particular value above the ordinary workman the first period, but, having found himself, would be of special service in subsequent periods. The mill would carefully watch the student group the first year, and pick those who show promise and aptitude. An American mill did this with students from the paper and pulp department at the University of Maine, and was quite pleased with the result. That was a private arrangement. It is a Canadian idea to organize on an association basis.

It is pleasant to note the progressiveness and willingness to cooperate on the part of several of the smaller mills, and a bit surprising to see some of the large mills making little apparent effort to accommodate a few students in the organization. Perhaps they do not realize that sometimes it is better to give a chemist or engineer a little experience in the office or yard than in the laboratory or machine shop. We have known of young men getting a very good idea of materials from a summer's work in the store room. It is the atmosphere of the mill and the attitude of the men that counts, more than the particular job he is put at.

A WORD FOR FLEXIBLE COUPLINGS.

The paper machine of the Beatharnois Mill of the Howard Smith Paper Mills is driven by a two cylinder vertical engine, set about midway of the variable speed shaft. It is connected to the shaft by flexible band couplings. Something happened one day

about a year ago, and the shaft was very badly bent up. The machine was down two days for repairs to the drive, but due to the coupling giving way, no harm was done to the engine. Otherwise it might have taken much longer, as the engine is made in England.

The Pulp & Paper Magazine is also advised of a case at the St. Maurice Pulp and Paper Co., where a stone broke and jammed, and much valuable machinery would have been damaged and time lost, had not the flexible coupling saved the situation.

ATTRACTIVE PROGRAM FOR TECHNICAL MEN.

The Local Committee of Arrangements for the Spring Meeting of the Technical Association of the Pulp and Paper Industry to be held in Buffalo, June 11-14, 1919, is now engaged in arranging details of railroad transportation to Erie, Pa., and Buffalo, N.Y., and planning for hotel accommodations, banquets, luncheons and automobile transportation.

The assembly point or rendezvous for members on the opening day of meeting, Wednesday, June 11, is Erie, Pa., and not Buffalo, N.Y. Every member who plans to attend the meeting should in the first place secure transportation to Erie, Pa., and arrange to reach there early on Wednesday morning. A committee will be at the railroad station to receive visitors. During the stay of the members in Erie, they will be the guests of the Hammernill Paper Company in an inspection of the extensive Hammernill Bond plant, and at luncheon and dinner during the day.

Special cars will be attached to the regular train leaving Erie for Buffalo at 9 o'clock in the evening. Buffalo is a two-hours' ride from Erie. It is expected that those who purpose attending the meeting will arrange in advance with any of the hotels named in "Paper" for April 2, on page 22.

It is planned to hold two business or scientific sessions in Buffalo on Thursday, June 12, and the day will close with a complimentary banquet for members and their friends at the Hotel Statler, which will be headquarters of the association during the meeting. Numerous details of the program of meeting have yet to be worked out. There are mill visitations being planned for Friday, June 13, but adequate and timely announcement will be made from the Secretary's office. An attendance of several hundred members is looked for.

Paul Kellogg, Larkin Company, Buffalo, is chairman of the Local Committee of Arrangements; C. C. Heritage, National Aniline & Chemical Company, Buffalo, is secretary for the United States program, and E. R. Low of the Beaver Board Company, Thorold, Ont., is secretary for the Canadian members.

The engine, shafting, and machines may be able to do a full day's work; the shop or mill is filled with operatives who are paid for doing a full day's work; a full day's work is expected—but after all, it is not accomplished. The machines do not run to speed, or improper delays occur, occasioned by too much "taking up" and repairing of belts.

(See also Page 404.)



UNITED STATES NOTES

Government efforts to stabilize prices through the Industrial Board of the Department of Commerce and consequently bring a quicker if artificial adjustment of business and industry to a peace basis have been definitely set aside. There is believed to have been a deeper significance than was generally believed in a recent statement by Secretary Redfield to the effect that he had joined with the Industrial Board in a cable to President Wilson, asking whether the Industrial Board should be discontinued. The sending of this cable followed consideration of a formal opinion with respect to steel prices and the methods adopted in reaching the steel price agreement from Attorney-General Palmer. This opinion has never been made public. While an official statement with respect to it cannot be obtained, it is known that the opinion was adverse to the methods employed because they run counter in spirit if not in fact to the Sherman anti-trust law and the Clayton act.

Permanent quarters have been opened at No. 1 Madison avenue, New York City, by the Bureau of Envelope Manufacturers of America. The bureau was formed three years ago as a branch of the American Envelope Manufacturers' Association for the purpose of giving valuable service and help to manufacturers of envelopes. Until recently the bureau had its headquarters in Kansas City, Mo. It has a membership of thirty manufacturers of envelopes and is rapidly growing.

The T. S. Morris Company, of Madison, Wis., was recently merged with the General Paper and Supply Company, also of Madison. As a result of this consolidation which ensued following the death of Thomas S. Morris, the General Paper and Supply Company is considered one of the State of Wisconsin's largest wholesale paper concerns. The capital stock has been increased from \$30,000 to \$100,000. Leo T. Crowley, who has been identified with the General Paper and Supply Company since 1910, becomes the consolidated firm's president and treasurer. Milo C. Hagan will be vice-president and George J. Sturm, secretary. The business will be continued at the Morris plant, 714-16 Williamson street.

American Writing Paper Company preferred stock has been strong on the markets of late on the belief that the annual report, which will be issued soon, will make a more favorable showing than in the previous year. The report is expected to show about \$10 earned on the preferred shares, as compared with \$1.20 earned in 1917 and \$20.20 earned in 1916.

The Paper Makers' Chemical Company, having completely outgrown its present quarters on Main street, in Holyoke, Mass., and because of a shortage of satisfactory sites in that city, will remove in the immediate future to Williamansett, just across the river from Holyoke. This concern supplies the paper trade throughout Connecticut and the eastern part of the country with rosin, sizing and other chemicals necessary for the making of paper. It located in Holyoke about three years ago.

Papers of incorporation were filed last week at Albany, N. Y., naming Max and Moses Bookspan, and

Samuel Goldstein, all of New York City, as the incorporators of the Uneeda Paper Box Company, capitalized at \$5,000, which is to engage in the manufacture of paper boxes.

At its first annual meeting, held in New York on April 2nd, the Paper Traffic Association of New York, elected as trustees for a term of two years Alfred Kinn, of the J. E. Linde Paper Company; W. B. Murtha, of the Harper Paper Company, and Mr. Dolge, of Henry Lindemeyer & Sons. Paul E. Vernon, of Paul E. Vernon & Co., and Mr. Marquart, of Dill and Collins, were elected for one year. Though it has been in existence for less than a quarter of a year, the organization has already been of considerable benefit and service to those of its members who had matters of traffic to bring to its attention. The present limited membership, however, handicaps somewhat the activity of the organization. With the accession of more members and increased revenue it is expected that all of those concerned in its activities can be benefited in a great many more ways as regards the traffic situation. The association headquarters are located at 150 Nassau street.

George W. Millar & Co., a pioneer New York house started in 1860 under the name of Mannahan & Millar, has been taken over by a new corporation formed last week, who, under a new plan whereby employees may become stockholders, are going to continue the business at the old address, 284 Lafayette street, and under the old name of George W. Millar and Company. The new corporation includes in its directorate W. D. May, Leslie W. May, and W. D. May, jr., who in 1910 bought out the Millar interests. The new officers of the firm are as follows: W. D. May, chairman of the board of directors; J. C. Mallalien, president and general manager; F. W. Bascom, 1st vice-president; J. F. Levens, 2nd vice-president; L. W. May, treasurer; W. D. May, jr., assistant treasurer, and O. D. Hyde, secretary. It is said that many of the employees have already availed themselves of the privilege of becoming stockholders.

A well-known paper-maker writes: "I wish you could prevail on the Paper-makers' Association to really get a move on with regard to some practical scheme for improving the technical knowledge of the rising generation of paper-makers. As you said, sir, recently — what is needed is a strong hand. Perhaps also something might be done in the direction of determining what can be done on commercial lines in the direction of ascertaining what class of papers hitherto made in enemy countries can be made in Great Britain and Ireland. If paper-makers could meet and frankly discuss the subject, something useful might be achieved.—W.P.T.R.

HYDROPLANES FOR FOREST PATROL.

The Canadian Pulp and Paper Association has urged the Government to meet the request of the Government of Quebec for the loan of two Hydro-aeroplanes for Forest Patrol service. This matter is now being taken up by the Department of Naval Affairs with the Government of Quebec, with a view to making satisfactory arrangements for such a service.

REVIEW OF RECENT LITERATURE.

F-0. Soda pulp manufacture. E. Sutermeister, *Pulp & Paper*, 17, No. 9, 10, 11, 12, pp. 215, 243, 263, 298 (1919).—In causticizing with lime, the more dilute the soda ash solution, the more efficient the process. Increased pressure or temperature do not increase this efficiency. Desirable limes should be high in available calcium oxide, and settle quickly. The best test is a practical one on a laboratory scale. High causticity results in distinct money savings. Instead of siphoning off the clear liquor after causticizing, filter presses may be used. It is claimed that their use gives increased efficiency in washing the sludge and as much as 66% increase in the amount of clear liquor obtained. A continuous process using the Dorr thickener is giving satisfaction in some cases.

Lime mud can be reburned, using kilns of the cement burning type at a cost of \$2.00 to \$2.25 per ton. Using gas fuel 3% of impurities reducing the causticizing power 2% and using powdered coal 6% of impurities reducing the causticizing power as much as 18% are introduced into the lime for each passage through the kiln. Between 70 pounds and 130 pounds steam pressure, an increase of 10 pounds reduces the yield about 2%. Between 40 gm. NaOH per liter and 80 gm. NaOH per liter each increase of 10 gm. per liter reduces the yield by about 1%. The amount of bleach used increases very rapidly until 26% caustic is added, and then the rate of increase rapidly diminishes. The yield decreases as the per cent caustic increases, but at a steadily diminishing rate. The use of 25% soda ash in place of 25% caustic hardly softens the chips. The yield decreases and the bleach consumption increases as the cooking time increases. With a 14% caustic consumption, the chips are merely softened, between 14% to 19.5% consumption there is the transition to commercial fibre, while with over 19.5% cellulose is destroyed.

It has been suggested to use black liquor in diluting strong caustic with the object of protecting the fibre. If 9% of the total volume is black liquor, the bleach required increases from 8.4% to 10.1%, and the yield is increased 3 to 4%. A greater volume does not give increased yield. The use of 0.1 to 0.2% of sulphur may increase the yield as much as 2%, depending on the kind of wood used. From cooks of resinous woods, turpentine can be recovered from the blow-off gases, and methyl alcohol, nitrogen bases, and acetone when poplar is used.

Soda pulp digesters are unlined steel shells, the seams being either welded or riveted, either horizontal rotary or stationary vertical, having a capacity of from three to fifteen cords. The heating may be either direct or indirect, and the circulation natural, forced by outside pumps, or induced by inside steam jets. Steam consumption for about the first half hour is at the rate of from 2,000 to 2,500 pounds per hour per cord, dropping rapidly until at the end of about two hours it is only 10 per cent of this value. Total steam consumption is 2,000-2,400 lbs. per cord, being larger the smaller the digester. Rotaries require more floor space, but less height than vertical digesters, about the same power, more steam owing to their smaller size, and much more time to blow and re-charge.—R. C.

K-6. Production of paper pulp from papyrus. H. H. Spicer, London, from J. Wells, Cairo, Egypt, *Eng. Pat.* 120,086, *J.S.C.I.* 38, No. 1.—Papyrus is thor-

oughly dried and matured, for instance, by storage for 1 year, and then crushed between rollers; the crushed material is boiled for 4-8 hours, in open pans with water and 25-30% of its weight of lime, and treated mechanically for the separation of the fibres. Sudan papyrus yields about 36% fibre. Alternatively, the inner fibre and pith alone may be treated by this process.—D. E. S.

K-12. Suction couch rolls. L. M. Blyth, Leith, *Eng. Pat.* 120,147, *J. S. C. I.* 38, No. 1.—A suction couch roll is composed of a central solid roller and an outer perforated cylinder, which is supported concentric with the solid roller by means of intermediate rollers, which revolve in bearings on the end frames. The central roller and outer cylinder are positively driven in opposite directions, and the intermediate rollers revolve by frictional contact with the driven parts of the apparatus, etc.—D. E. S.

K-12. Suction boxes. W. A. Murray and C. E. Putnam, Chisholm, Me., U. S. Pat. 1,280,524, *J. S. C. I.*, 38, No. 1.—In a Fourdrinier machine, several suction-boxes are coupled together and the whole set is connected with a mechanism for imparting to it a unitary reciprocating movement in the direction of the travel of the wire.—D. E. S.

K-12. Method and machine for making paper. C. E. Pope, Springfield, Mass., assignor to Great Northern Paper Co., U. S. Pat. 1,279,756, *J. S. C. I.*, 37, No. 24.—To remove the paper web from the paper-making wire at the beginning of the operation of the machine or after a break, a narrow strip of the paper is formed at one edge of the wire, and two oppositely directed transverse jets of air are directed against the two edges of the strip at the point where the strip leaves the wire, so as to meet behind the strip. The adhesion of the strip of paper to the wire is thus broken at this point, and the strip deflected from the roller so as to fall on to the press roll felt.—D. E. S.

K-12. The determination of loss of steam from driers. B. M. Baxter, *Pulp & Paper*, 17, No. 7, page 159 (1919).—The return from the driers is piped to weighing tanks, a cold water connection being made between driers and tanks so that all steam in the return may be condensed. The temperature of the steam, of the cold water and of the mixture is determined, together with the amount of cold water used. From this data the loss in pounds of steam can be computed.—R. C.

K-14. Knives for paper cutting machines. Niel Gray, Jr., *Pulp & Paper*, 17, No. 9, p. 221 (1919).—Simple tests to determine whether a knife is right or not, together with directions for sharpening, are given.—R. C.

K-14. Means for imparting surface finish to paper. H. P. Howe, Steep Falls, assignor to Eastern Mfg. Co., U. S. Pat. 1,278,659, *J. S. C. I.*, 37, No. 24.—The machine comprises a pair of curved finishing plates covered with linen fabric, which is maintained under tension on the convex surface of each plate. The curved plates are oscillated in tangential contact with each other between a pair of calendar rolls. Means are provided for feeding sheets of paper between the two oscillating plates and for stacking them in a receiving box after passing between the rolls.—D. E. S.

K-17. The manufacture of book papers from wood fibres. A. O. Bowness, *Pulp & Paper*, 17, No. 8, p. 195 (1919).—A general discussion of the manufacture of

all-wood book papers is given, including remarks under the headings of bleaching, beating, sizing, coloring and loading, and machine operation.—R. C.

K-18. Water and fire-resisting fibre-board. A. M. Clapp, Marblehead, assignor to The Metalite Co., Amesbury, Mass. U. S. Pat. 1,280,400. J. S. C. I., 38, No. 1. (See Pulp & Paper, p. 297).—D. E. S.

K-18. Method of filling and indurating porous material. W. V. Lander, Newton, Mass., assignor to General Indurating Corp. U. S. Pat. 1,278,943. J. S. C. I., 38, No. 1. (See Pulp & Paper, p. 297).—D. E. S.

K-13. Manufacture of acid and weatherproof paper. Iedderheimer Kupferwerk and Sueddeutsche Kabelwerke, A-G., Abt. Sueddeutsche Kabelwerke in Mannheim, German Pat. 307,867. J. S. C. I., 37, No. 24.—An oxidizing agent such as red lead or the like is incorporated with the pulp and the dry finished paper is subsequently impregnated with a drying oil, which is oxidized in the paper to a coherent protective layer capable of resisting acids and moistures.—D. E. S.

K-23. Process for waterproofing fibrous material. B. F. Bovard, Winona, Minn. U. S. Pat. 1,280,954. J. S. C. I., 38, No. 1.—The material is immersed in a solution of saponified linseed oil and casein until the fibres are thoroughly saturated; the excess moisture is then removed by squeezing and the material is immersed in a solution of an aluminum compound, and finally dried.—D. E. S.

L-4. Rendering porous vessels impervious to fluids. G. H. Hadfield, Miteham, and A. E. Bowtree, Sutton, Surrey, Eng. Eng. Pat. 120,410. J. S. C. I., 38, No. 1.—In making the joint between the sides and ends of the vessel, one or both of the surfaces to be united are previously coated with a composition similar to that which is to be used for making the porous portions impervious, and the parts are joined before the composition has dried. The vessel, consisting for instance, of a paper or cardboard tube with metal caps or rings at the ends, is then mounted on a revolving support, and a little of the melted composition is poured in. The vessel is rotated on a horizontal axis at a sufficiently high speed to cause the centrifugal force to overcome the effect of gravity on the portions of the fluid, which for the time being are vertically above the axis of rotation. Corrections for error in entering the vessel are partly overcome by the distribution of some of the fluid by means of a brush, to the interior.—D. E. S.

M-4. The application of power in the newsprint industry. John Stadler. Pulp & Paper, 17, No. 5, p. 111 (1919).—Where direct connection is possible a rigid coupling is the best, provision being made to take care of trifling bearing level differences by the flexure of the shaft. Such a connection is not desirable if the machine driven causes severe vibration. Geared drives for electric motors are not recommended owing to difficulty in earing for them and to vibration set up. Chain drives, best run in oil, are satisfactory if sudden changes in load are not made. Belts are silent, do not transmit vibration, and tend to throw off on sudden overload. Rope drives are not usually applicable to motor drives on account of excessive rope speed.—R. C.

M-6. Distribution of electrical power in pulp and paper mills. E. B. Wardle, Pulp & Paper, 17, No. 10, p. 237 (1919).—A very complete sketch of power distribution as computed by the Laurentide Company is given. Total power was about 21,000 H.P. in 1917.

Grinders producing about twenty tons per day used from 55 to 65 H.P. per ton. The newsprint machines averaged 7.8 H.P. per ton. The whole ground-wood department averaged 73.12 H.P., the sulphite department, 8.69 H.P., and the newsprint department 12.19 H.P. per ton of product.—R. C.

P-2. Educational campaign. Paper Mill, 42, No. 9, p. 18 (1919).—A complete account is given of the proposed course for paper and pulp makers recently submitted by the committees on vocational education of the Technical Association of Canada, and the United States.—R. C.

P-2. Progress of the Typothetae's three-year program. E. T. Miller. Paper Mill, 42, No. 7, p. 2 (1919).—It is proposed to work out a standard cost-finding system and standard courses in salesmanship, estimating, accounting, and business administration.—R. C.

P-2, R-6. Intensive training and management. W. O. Lichtner. Paper Mill, 42, No. 11, p. 10 (1919).—R. C.

R-5. Raw materials needed by French paper mills. Pulp & Paper, 17, No. 11, p. 259 (1919). A. Janot, Paper Mill, 42, No. 8, p. 10 (1919).—Data is given on French imports and exports of paper making raw materials.—R. C.

R-5. Report of the National Paper Bureau on the needs of the French paper industry during the first five years after peace is declared. (Rapport de l'Office National des Papiers sur les besoins de la Papeterie francaise en matieres premieres au cours des cinq annees qui suivront la signature de la paix.) Le Papier, 21, p. 185 (1918).—France will need to import annually at least 850,000 steres of wood (1 stere=35.31 cu ft. about ¼ cord), between 40,000 and 50,000 tons of waste paper, 100,000 to 150,000 tons of alfa, 200,000 tons of mechanical pulp, 250,000 tons of chemical pulp, 70,000 tons of kaolin. It can supply its own needs for cotton and woolen rags and straw. 60,000 to 70,000 H.P. would suffice to manufacture all the mechanical pulp imported, and 25,000 H.P. for the chemical pulp imported. The industry can supply all domestic requirements, but there will probably be little or no exportation for some time, with the possible exception of the very highest grade papers.—A. P. C.

R-5. Report on the resources and economic needs of France in the post bellum period, and on the changes to be made in the tariff protecting the paper industry. (Rapport sur les ressources et besoins economiques de la France au lendemain de la guerre et sur les modifications a apporter au tarif douanier protegeant les industries du papier.) Le Papier, 21, p. 188 (1918).—The French paper industry demands that a special duty be placed on all wood exported from Allied countries to the Central States, and on all pulp imported by Allied countries from the Central States, and also that the tariff be raised on chemical pulp imported into France, but not on mechanical pulp.—A. P. C.

R-7. Making work attractive. R. B. Wolf. Pulp & Paper, 17, No. 5, p. 99, No. 7, p. 165 (1919).—Further particulars are given concerning the standardization of processes and output in a news mill and of the methods used to arouse the interest and secure the co-operation of the workers.—R. C.

R-0. The Russian paper industry. Le Papier, 21, p. 197 (1918).—Notes on the developments of paper-making in Russia since the 16th century. Report presented in 1916 to the Paper Committee in Petrograd, by G. R. Saellmann.—A. P. C.

PULP AND PAPER NEWS

The many friends of Rev. Dr. Briggs, for many years the veteran steward of the Methodist Book and Publishing House, Toronto, and a director of the Toronto Paper Mfg. Co., will sympathize with him in the death of his wife, who passed away last week, aged 73 years. She was the daughter of the late William Clarke, of Melbourne, Australia, and while visiting relatives in Montreal with her mother over fifty years ago Mrs. Briggs first met her husband. The deceased was very prominent in church work, and besides her husband leaves one son, A. W. Briggs, of the legal firm of Briggs and Frost, who is secretary of the Toronto Paper Mfg. Co. Dr. Briggs is now in his eighty-third year and has been Steward of the Methodist Book Room for forty years.

The offices of the Grand Division of the Canadian Brotherhood of Railroad Employees have been transferred from Halifax to Ottawa, and the Canadian Railroad Employees Monthly, which is the official publication of the Brotherhood, will, starting with the issue in May, be published from Ottawa. The typographical appearance of the paper will be greatly improved and increased printing facilities be at the disposal of the publishers.

Howard A. Casey, of Holyoke, Mass., who represents the Crocker-McElwain Co., manufacturers of writing papers, was in Montreal and Toronto recently, calling upon the trade.

Arthur Lucas, representing Robert Fletcher & Son, Limited, Manchester, Eng., who are the proprietors of the Kearsley Paper Works, Stoneclough, was a late visitor to the trade in Montreal and Toronto, and his many old friends were pleased to greet him. His trip is to assist in the reconstruction of trade and the renewal of pre-war relations of his firm with their Canadian customers.

H. M. Thorne, secretary-treasurer of the Canada Paper Co., Montreal, is spending a holiday in the south and visiting various points of interest.

Sir Charles Gordon, of Montreal, who is a director of the Provincial Paper Mills Co., has gone on a visit to England, accompanied by Lady Gordon.

I. H. Weldon, of the Provincial Paper Mills Co., Toronto, and his wife, are spending a few days at Hot Springs, Virginia.

Alex. Buntin, of Buntin, Reid Co., Toronto, and family, are spending a few weeks at Atlantic City.

Joseph Kilgour, of Kilgour Bros., Toronto, who has been for several weeks in the sunny south, has returned home.

John Martin, of the John Martin Co., Winnipeg, is now at Atlantic City, where he hopes to regain his health, which has been very poor for many months.

N. G. Czowski, of Montreal, general manager of the Canada Box Board Co., was in Toronto last week on his return from a business trip to New York City.

The many friends of R. S. Waldie, of Toronto, President of the Toronto Paper Mfg. Co., are congratulating him on the recent advent of a son and heir in his family.

John Rashkofsky, who was a member of the staff of E. Pullan, Toronto, and went with the Canadian Ex-

peditionary Force to Siberia, has returned home and will resume his former duties with the firm. Mr. Siegal, who was manager of the Hamilton branch of the firm before he enlisted, will also be back to Toronto in the near future.

W. E. Smallfield, former President of the Canadian Press Association, and proprietor of the Renfrew Mercury, which has been in the control of one family for nearly half a century, has sold the journal to W. R. Davies, late of the Herald, Thamesville, Ont., who in turn has disposed of his publication to Ross McGuire, son of William McGuire, postmaster of Tilsonburg and publisher of the Tilsonburg Liberal. Mr. Davies is a former Chairman of the Ontario and Quebec division of the Canadian Press Association.

A. P. Costigane, of Toronto, Safety Engineer of the Ontario Pulp and Paper Makers' Association, spent a few days last week in Hawkesbury, Ont., at the plant of the Riorlon Pulp and Paper Co., and reports that active work undertaken in the interest of the Safety movement is receiving every encouragement and support at the mill.

The plant of the Toronto Paper Mfg. Co. at Cornwall, after being closed down for the past two weeks during which repairs were being made to the Cornwall canal, resumed operations on Monday. The equipment was thoroughly overhauled during the shut-down.

J. E. Savard, who for several years was on the selling staff of the Canada Paper Co. in Montreal, but for a considerable period has been with Joseph Fortier, Limited, manufacturing stationers, Montreal, died very suddenly while at work on Saturday. He was well known in the paper trade and leaves a wife and large family.

A meeting of those who are favorable to a manufacturing clause being inserted in the copyright bill now before the Senate was held in Toronto this week. Dan A. Rose is the chairman of the committee having the manufacturers' end in hand.

A CLEVER ADVERTISEMENT.

An enterprising and unique bit of advertising was carried recently by a Toronto department store and a local journal. One page of the daily had printed on one side of it a large advertisement of seasonable wall paper of a pretty chintz pattern suitable for a bedroom. On the reverse side was a sample in colors of the special range offered. Rolls of the hanging paper were run off on the rotary press and on the pattern side were single lines at top and bottom giving the name of the firm and the price. The innovation aroused much interest among house-wives who are naturally thinking a great deal these days of spring decoration.

Care should be taken to let belts run free and easy, so as to prevent the tearing out of the lace holes; it also prevents the rapid wear of the metal bearings.



CANADIAN MARKETS.

Toronto, April 21.—Business with all the mills continues very fair, and newsprint plants are exceptionally busy. Advertising has never been better with the big daily and also the weekly papers than it has during the present Eastertide, and this has kept up the demand. Newspaper publishers are interested in the proposed legislation which Hon. Rodolphe Lemieux has introduced at Ottawa, whereby public journals may be compelled to disclose the names of their owners. This law has been prevalent in the United States for some years, and it is stated that the arguments in its favor are as valid in Canada as they are across the border. A number of leading journals have favorably commented upon the proposed legislation and contend that the readers of the press have a right to know whether it is an untrammelled organ of opinion or the mouthpiece of special interests. One leading exponent of public thought avers that such a law would blow away a cloud of suspicion that has gathered around the press through attacks which are, with scarcely an exception, groundless. During the last parliamentary election the statement was made by certain public men that the big daily journals were bought up, or otherwise influenced financially, to take up the Unionist cause. This is a slander on the dignity and unimpeachable character of the leading mediums in the Dominion. The allegations have been of such a broad, general character that individual publishers have not been able to get at those making the charges. Had they been specific the calumniators would have had to face proceedings in the courts.

Business with book and writing mills is good, and tissue and toilet plants are also kept active. One leading manufacturer in the latter line stated this week that he could get enough export orders alone if he wanted to accept them to keep his mill going. The producers are looking after home interests first, the same as they did during the war, and if export facilities open up in the way of tonnage they will be able to take aboard considerable in that direction. Prices are holding firm and, with the revival of business on

the other side of the border, there is a better feeling prevailing throughout the trade. It is felt that the coming summer will be a busy one, and from this out there is bound to be more business going. Commercial houses and jobbers who have been hanging back, have now found that prices are not going to come down and that wages will not fall, and, therefore, the idea of a decided drop in quotations is slowly but surely being banished.

Paper box factories are getting busier and report some nice orders, while box board mills are kept going to capacity, and more orders have been received during the past few weeks than for a long time previous.

There has been appearing in the press a great deal started on the other side, to have the embargo on Crown lands pulp wood removed, so that the wood from these limits would not have to be turned into pulp or paper in the Dominion, but could be shipped across the border in its raw state. Thus a blow would be dealt at the upbuilding of the pulp and paper industry in Canada. The Dominion is now supplying American publishers with about 33 per cent of the newsprint which they use annually, whereas ten years ago the export business in that line was practically nothing. The result of the embargo placed on the export of pulp wood from Crown lands is that there are to-day fully a dozen big pulp and paper concerns doing business on a large scale which would never have been brought into existence, had it not been for the wise provision adopted by the provinces of Ontario, Quebec and New Brunswick. The story that there is going to be some amendment to the non-export regulation is revived every now and then, but those who are in a position to know take no serious stock in the rumors. It might be well to let sleeping dogs lie, as the opinion prevails that, if much more is heard along this line, the agitation may gain an onward sweep, and, the situation may be reversed. Instead of removing the embargo it may be made to apply to private lands as well. In fact, such a step would have been taken long ago, had it not been for the opposition of the rural representatives

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES ²⁰⁷⁴ 2075 MURRAY HILL, NEW YORK

We are always in the market
and ready to pay good prices
for

SULPHITES

Bleached and Unbleached of
Canadian manufacture.
Write and let us show you
what we can do.

in the legislatures, who have put up a powerful plea in behalf of the private owner or settler, contending that he would be at the mercy of the home market, and would have to sell his wood at a greatly reduced price.

A leading pulp wood firm in Quebec stated this week that the quantity of wood cut by settlers in that province during the past season would be approximately 20 per cent less than a year ago. There had been a considerable falling off in the demand owing to the pulp mills being rather quiet since the signing of the armistice. Although this should have the effect of lowering prices, it is considered that such will be only temporary. The pulp business is expected to be revived at an early date, and is sure to come to its own. Prices are holding firm, and the outlook gets better all the while. No one has any fear but that the future of the industry is assured, and while orders are coming a little more freely than they were, there is still much room for improvement. In ground wood buying is slow, but sales are being made in limited quantities. Some shipments of sulphite pulp have gone forward during the past week. With the opening of navigation on the St. Lawrence and the Welland Canal there is expected to be considerable improvement in the shipping situation from this on in the matter of bottoms to carry cargoes.

In the rag and paper stock market there has been a drop in prices on most lines, and while conditions are a little brighter than they have been for some time, it is only the cheaper grades of paper stock that are in active demand. The more expensive lines are showing somewhat more life than recently, but conditions might be much improved. In rags, requisitions are more numerous than they were, and there are some calls for floeks and satinettes.

Toilet papers in Western Canada have been reduced considerably, and now the discount is 35 per cent instead of 25, f.o.b. mill.

A notice has been sent out by the Canadian Paper Trade Association that the packings adopted by tissue mills have not been uniform, and that the use of the forty ream bale did not coincide with the resale price of fifty reams. The tissue mills were consulted, and a new system of packing has been adopted that will be more convenient to the jobber. It has been decided by the mills that hereafter tissues are to be packed in five, ten, twenty and fifty ream bales, and it is thought the adoption of these packings will meet the situation.

Rag and Paper Stock Prices.

No. 1 white envelope cuttings	\$3.75
No. 1 soft white shavings	\$3.25
White Blanks	\$1.00
Heavy Ledger Stock	\$2.20
No. 1 magazine	\$1.40
No. 1 book stock	\$1.20
No. 1 manila	\$2.00
No. 1 print manila	.90c
Folded news	.70c
Over-issue news	.80c
Kraft	\$3.00
No. 1 clean mixed paper	.60c
No. 1 shirt cuttings	.8c
No. 1 unbleached cotton cuttings	.71c
No. 1 fancy shirt cuttings	.63c
No. 1 blue overall cuttings	.6c
Bleached shoe clip	.61c

White cotton hosiery cuttings	.7c
Light colored hosiery cuttings	.6c
New light flannellette cuttings	.6c
No. 2 white shirt cuttings	.7c
City thirds and blues (repacked)	.23c
Floek and satinettes	1.25c
Tailor rags	1.15c

NEW YORK MARKETS.

New York, April 19. — Demand for the various grades of paper has been fairly consistent, but of limited proportions this week. Merchants as a rule report doing a moderate business, but say that consumers are still noticeably restricting their buying, confining orders to supplies directly needed and showing no disposition to anticipate their requirements ahead. Prices continue to sag on most grades, although there has been no drastic recession. A new factor has entered into the situation, making for easiness in value. Wood-pulp has commenced to decline, with the result that paper manufacturers no longer have the high cost of raw material as an argument for the maintenance of prices on their finished product. Then, too, there are certain paper makers who are cutting prices apparently in an effort to stimulate buying, feeling no doubt that the nearer normal prices reach the greater freedom buyers will exercise. Whether action on the producers' part in lowering prices is accomplishing the desired result is questionable. Indications are that it isn't, that rather than inducing consumers to increase the scope of their buying, it is causing them to be more cautious in their purchasing operations.

The cheaper grades of paper, such as newsprint and the lower qualities of book paper, are moving into consuming channels in comparatively good volume. This is due primarily to the increased volume of advertising publishers are receiving and the resultant larger consumption of paper. It is quite apparent, however, that even consumers of these descriptions of paper are pursuing a most conservative policy and are absorbing only such supplies as they need from week to week. There is nevertheless a sufficient amount of buying being done not only to sustain prices, but to give them a strong tone, which condition is in direct contrast to the easiness existing in other grades. Newsprint is firm, with mills receiving the full fixed prices on contract shipments. Side runs are commanding attractive prices, while transient buyers are finding it necessary to meet the figures quoted to obtain supplies. Book paper is selling at between 8.00 and 8.50 cents per pound for super and around 8.00 cents for machine finished.

It is a difficult matter to report accurate prices on fine papers. Quotations are being changed so frequently that prices are different every day and manufacturers seem less hesitant to reduce prices in their anxiety to secure business. Tissues have eased off slightly. No. 1 white is offered in at least some quarters at as low as \$1.00, while No. 2 white is available at 90 cents. Wrappings are in restricted demand and prices irregular. Around 7.50 cents a pound on No. 1 kraft wrapping is the basis generally quoted, though indications are purchases could be made at lower levels.

The market for boards is moderately firm. Buying, while not voluminous, is steady, and there is considerable more activity than was in view a short while ago.

WOOD PULP TRADING CO., Ltd.

NEW ADDRESS:

501 Fifth Avenue, Astor Trust Building
Cor. of 42nd Street
NEW YORK CITY

BRANCH OFFICES:

Buenos Aires, Argentine,
Rio de Janeiro, Brazil.

Prices vary to a marked extent, but \$40 per ton for chip and \$15 to \$50 for news board are representative quotations named by mills.

Ground Wood. No perceptible expansion in the demand for mechanical pulp has occurred this week, and the market remains in very much the same position previously reported. Sales have been scattered and have involved limited tonnages as a rule, for consumers have confined their orders solely to pulp needed for direct use. Prices are maintained, with about \$26 per ton at the grinding mill in the East being the most common quotation made. Reports that Canadian grinders are shipping substantial amounts of groundwood to England have a sustaining influence on the market here, for it is felt that the export movement from the Dominion will effect the removal of much of the surplus supply across the border, and that when demand increases buyers will not find the accumulation that it is believed they think exists.

Chemical Pulp. Reaction in foreign pulp prices has been the leading feature of the week in the pulp market. Certain importing firms have cut prices on spot supplies of sulphite and kraft to a marked degree, and Scandinavian pulp is now being offered at lower prices than for a long time. In fact, prices on dock stocks have been reduced to below the cost of replacement on the other side, which of course makes for an unhealthy market condition. Foreign unbleached sulphite has sold at 4.00 cents per pound ex dock, notwithstanding the assertions of importers that it costs considerably more than this figure to bring pulp over from Sweden under prevailing conditions at a profit. Scandinavian kraft pulp is selling at \$80 a ton although it is stated on high authority that pulp of this class cannot be replaced at present for less than \$90. Foreign bleached sulphite is available in limited parcels at 8.00 to 8.25 cents per pound, and imported easy bleaching sulphite at 4.50 cents. Domestic grades are holding up fairly well in price, but the decline in imported pulp naturally has a softening influence, and sales have been recorded at lower figures. Domestic bleached is quoted all the way from 5.00 to 6.00 cents per pound at the pulp mill. One of the chief producers is still asking the latter price, while sales have been made of No. 1 bleached of good quality at 5.50 cents, and of No. 2 grade at 5.00 cents. Unbleached sulphite of news grade is quoted at \$65 to \$70 a ton and easy bleaching at \$80 to \$90, while domestic kraft is selling at around \$70.

Rags.—The market for rags continues in a more or

less comatose state. Demand shows little or no improvement, and apparently the only thing holding prices on prevailing levels is the high cost of collection and sorting and the resultant refusal of dealers to lower their asking figures. Representative members of the supply trade insist that they cannot produce material to sell at prices below those they now are quoting, and seem determined to get the prices wanted or else not to do business. Paper manufacturers, on the other hand, seem to be in no immediate need of fresh supplies and are keeping out of the market excepting for occasional purchases of small lots. Repacked thirds and blues are chiefly called for, and are selling to manufacturers at between 3.00 and 3.25 cents f.o.b. New York, depending on the quality of packing and the amount involved. White rags are noticeably neglected, and offerings of No. 1 repacked whites at 5.50 cents New York, No. 1 miscellaneous packing at 4.75 cents and street soiled whites at 3.00 cents are reported. The situation in roofing material is extremely dull. Felt mills evince little or no interest and very few rags are being shipped. Prices have worked down to levels where packers cannot hope to break even in producing stock, and there seems little reason to doubt that once consumers resume buying they will necessarily have to grant better prices to bring out supplies. New rags are moving mainly elsewhere than to manufacturers of paper, and are nominal in price. Reports are heard of sales of No. 1 white shirt cuttings for export at around 10.00 cents per pound, but there is some question that business in this connection is actually being done.

Paper Stock.—Low grades of old paper continue to move into consuming channels in comparatively large quantity, while mills still evince a lack of worth while interest in the better qualities. No. 1 mixed paper features the demand at present, and board manufacturers freely offer between 45 and 50 cents per hundred pounds f.o.b. New York. Folded newspapers are in less call than they have been recently and prices are off a bit, sales being reported at 50 to 55 cents at the point of shipment. Manilas are quiet, while buying interest in kraft paper is cooled to a marked extent. Shavings are almost unsalable in any sizable quantity and quotations are rapidly dropping. No. 1 soft white shavings can now be purchased at 2.75 to 3.00 cents a pound f.o.b. New York, while No. 1 hard whites are offered at around 4.00 cents.

Bagging and Rope.—A firm market situation prevails for old manila rope, and reports are heard of

NORDLING, MACÉ & CO.,

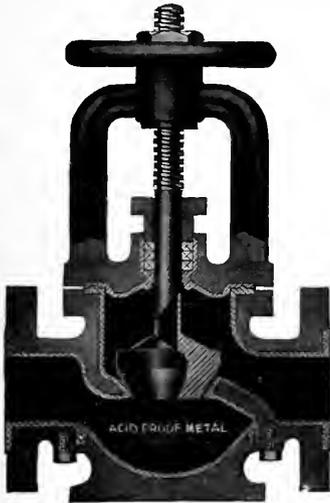
PARIS, 11, Rue de la Pépinière,

Telegrams: "NORDKEL."

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ACID RESISTING PUMP VALVES



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For lining Acid Tanks, Agitators, and Sulphite or Sulphate Vats, Hoyts Sheet Metal will give far better service than the ordinary Chemical Sheet Lead in the market. If you will write us stating conditions under which your Sheet Lead is operating, we would be pleased to go into the matter fully and will convince you of the economy of Hoyts Sheet Metal.

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Manufacture

Hanging, News, Bag, Wrapping
and Poster Papers;

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Address: **Portneuf Station, P.Q.**

sales to mills up to 4.50 cents a pound f.o.b. New York, though indications are most of the business passing is being done at slightly lower figures. Scrap bagging is quotably steady and in restricted demand. Important consumers are doing little buying, and current orders seldom call for more than a carload or two at a time. Prices are at a basis of about 2.25 cents per pound New York for No. 1 scrap bagging, free from tender.

HANDLING CUTTERS IN CANADA.

Following the recent announcement that a combination of the Seybold Machine Co. and the Oswego Machine Works, readers of the Pulp and Paper Magazine will be interested to know that the Toronto Type Foundry Co. have been appointed direct selling agents in Canada for Seybold paper cutting machines, three-knife book trimmers, die presses, corner cutters, automatic knife grinders, etc.; also for Oswego automatic rapid production cutters, Brown & Carver cutters, and Ontario cutters.

A SHAVED OFF BUSINESS CARD.

Our Pacific Coast manager sends us a unique business card bearing the address of Clark & Lyford, Ltd., Forest Engineers, which Mr. P. L. Lyford passed him at a recent visit to this firm's office. It is a cross section the thickness and size of an ordinary visiting card, but it is cut from a piece of soft maple. These are manufactured by a firm in New York State. This is a use for timber new to the publishers, and is really the latest thing in "shingles."

AN IMPORTANT OFFICE FUNCTION.

Probably no part of the office work is more important than the manner of filing correspondence, records, and data on manufacturing operations— and probably none gives more trouble when not properly conducted. A monthly magazine devoted entirely to this subject was started in New York last year. It is called "Filing," and is published at 320 Broadway. The subscription price is \$2.00, but a trial subscription is offered for a short time at \$1.00 for nine months. A fine series of articles is outlined as well as regular discussions of such subjects as Follow-ups, Specialized Filing, Filing Equipments, File-room Practice, Use of Index Cards, Inspection of Papers, Training of Personnel, Saving of Filing Space, Information Bureau Work, Filing Methods in General, Equipment of Mailing Rooms, Government Methods of Filing, Relation of File Room to Other Departments, etc. An idea for a dollar is cheap.

EVACUATOR FOR PAPER MACHINE DRYERS.

U. S. patent No. 1,258,055, describes the invention of the device of Clyde L. St. Clair and John H. Hoffman. According to "Makin' Paper" for February, which shows several drawings, there are a series of special flanges on the inside of the dryer and extending, with one complete turn from one end to the other. These ribbons convey the water, which at high speeds would otherwise simply be held by centrifugal force against the shell, to a spiral outlet, through which it is conveyed to the centre of the dryer head and out through the trunnion. It is stated that this device will remove all water of condensation from a dryer, having a peripheral speed of nearly 900 feet per minute.

ST. CLAIR VERTICAL CENTRE CRANK ENGINE.

St. Clair Bros., of Galt, Ontario, have recently gone into the manufacture of a line of plain vertical crank engines, based on 80 pounds initial pressure, from 3 to 18 horse power. There is hardly an industrial plant in Canada which cannot find use for such an engine as is illustrated herewith, and is particularly



adaptable for the operation of hoists, elevators, etc. With so much construction work taking place among the pulp and paper mills this season, the engine should prove of particular use to the industry. The manufacturer will be glad to send full data in this connection to any firm interested.

THE SCHOOP METAL SPRAY PROCESS.

Two years ago the Technical Section saw a demonstration of this process and some interest has been aroused, both in this country and Europe, in its application to pulp and paper mills. A book of 266 pages with 130 illustrations, covering the development and application of the process has been published by H. Guenther and M. U. Schoop, Stuttgart; price 9 marks. It is called "Das Schoopsche Metallspritz Verfahren, seine Entwicklung und Anwendung nebst einem Ueberblick über seine Stellung zu den übrigen Metallisierungsmethoden und einen Abriss seiner Patent Beschiehte."

BEARDMORE BELTING BOOK.

We picked up the new catalog of the Beardmore Belting Co., Toronto, with the idea of glancing through a lot of uninteresting stuff. Strange to say, nearly every page has been read and much good material discovered. Some of it will appear as "fillers" from time to time in the Magazine, giving our readers some helpful pointers on belts and their use. This company makes all kinds and styles of belt and supplies such accessories as cement, belt hooks, etc.

MATTAGAMI PULP & PAPER CO., LIMITED

BANK OF HAMILTON BUILDING - TORONTO, CANADA

Specialize in

Strong Easy Bleaching Sulphite Fibre

Manufactured from Clean Sound Spruce

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Bleached and Unbleached
WOOD PULP
of every description

M. GOTTESMAN & COMPANY

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18 E. 41st Street

New York, N.Y.

Established 1886

BURRS.

Catalog No. 1 of the International Burr Corporation of Watertown, N.Y., was handed the editor by Wm. Whyte, of Canadian Fairbanks-Morse, who handle these burrs. The booklet tells how the burrs are made, shows eight of the general styles of cut and explains the new expanding mandrel for holding these shell burrs rigid.

BALL BEARING MANUFACTURERS COMBINE.

Of interest to all users of bearings is the combination just announced, effective May first, of the Hess-Bright Manufacturing Company, the SKF Ball Bearing Company, the Atlas Ball Co., and the Hubbard Machine Company. The new company, under the name of SKF Industries, Inc., will offer a comprehensive line of ball bearings, including the Hess-Bright deep-groove type, SKF self-aligning radial and thrust bearings and ball bearing pillow-blocks and shafting hangers.

Through the medium of its engineering organization, backed up by a well equipped laboratory, the new company will be able to place at the service of bearing users the knowledge gained in many years study of anti-friction bearings of all kinds. On request, manufacturers' problems will be analyzed in detail and that type of bearing recommended which (independent of sales considerations) is best suited to the conditions met. In addition the laboratory staff will carry on research studies affecting anti-friction bearing design and application.

SKF Industries, Inc., is the consummation by physical consolidation of a merger, begun some time ago of the four companies mentioned under the direction of B. G. Prytz, President; W. L. Batt, Vice-President; J. P. Walsh, Comptroller and S. B. Taylor, Sales Manager. The principal office will be at 165 Broadway, New York City, with branches at Boston, Philadelphia, Atlanta, Buffalo, Cleveland, Detroit, Cincinnati, Chicago and San Francisco.

U. S. PAPER STATISTICS.

A despatch from Washington says:—A comprehensive reclassification of our statistics of import and export commodities is being worked out by the Bureau of Foreign and Domestic Commerce in co-operation with the customs service, the Shipping Board, the War Trade Board, the Tariff Commission, and other governmental agents for submittal to the Secretary of Commerce and the Secretary of the Treasury. The objects in view are to give a more logical arrangement to our trade statistics, to facilitate both the tabulation and the utilization of these statistics, to increase the comparability of import and export figures by having a common classification for both and to give greater detail.

The new classification will be on a decimal basis. All commodities are divided into ten main groups. Each of these groups is in turn sub-divided into minor classifications. For the purpose of export statistics the subdivision will be carried to four places. For example, grains are subdivided into wheat, corn, oats, etc. Wheat is again divided as grain, flour, bran and middlings, etc.

For imports the classification will be carried to five figures. The more detailed classification of imports is required in order to make it possible to use the classification for the details required by the Tariff Act, and further to meet the wishes of the commercial interests of the country. In both exports and imports the new scheme will give a much greater detail than is found in the present classification.

While this new method departs widely from the one now in use, it is, for the most part, a change in the arranging of commodities under large headings rather than a change in the nature of the items included under the present groupings. It will not, therefore, destroy the possibility of comparing future trade statistics with the past.

Paper and pulp come under wood products which are Class 3 of the decimal system.

POWELL, LANE & CO., LTD., OPEN LONDON OFFICES.

The enterprising firm of Messrs. Powell, Lane & Co., Ltd., paper merchants, etc., of Gloucester, Eng., have established London offices at 62-63 Queen St., Cannon St., E.C. 4. At this address the firm's paper department will be conducted, and all inquiries for paper, boards, etc., should be addressed there. The manufacturing department will be continued at the Doeks, Gloucester. Mr. H. Elsworth, who has had 20 years' experience of the London paper trade, will be in charge of the new office.

In this connection we wish to correct an error in our issue of March 13th, where Mr. Lane's name was placed under Mr. Elsworth's picture, and vice versa. Our readers may make this correction so they will recognize these gentlemen, should they happen to meet.

NEW SYSTEM OF PACKING TISSUES.

The Wrapping Paper Section of the Ontario Branch of the Canadian Paper Trade Association recently held a meeting at which it was pointed out that the packings adopted by the tissue mills were not uniform, and that the use of the forty ream bale did not coincide with the resale price of fifty reams. The matter was taken up with the tissue paper manufacturers by N. L. Martin, of Toronto, secretary of the Canadian Paper Trade Association, who requested that some new scheme of packings be adopted that would be more convenient to the jobber. It has been decided by the mills that hereafter tissues are to be packed in five, ten, twenty and fifty ream bales, and it is expected that the adoption of these packings will adequately meet the situation. The results accomplished in this matter, it is pointed out, are only another evidence of the advantage of co-operation and an indication of what can be accomplished by association effort.

A NEW FREIGHT LINE TO EUROPE.

The C. P. R. Ocean Services announce the first sailing of the *War Belle*, a freight steamer of 9,000 tons dead weight, about May 10th. This event will mark the resumption of direct service between Montreal and Antwerp, Belgium. The future of the service depends largely on the outcome of this venture. It is felt that manufacturers of board, roofing and sheathing papers should be able to make good use of this opportunity in placing these important building materials in the hands of the reconstructors of Belgium and northern France. There should be a considerable demand for them in connection with the use of wood for rebuilding in those countries.

Mr. Wm. McGlashen, of the Beaver Board Companies is now on the other side with interest of wallboard, etc., but we are not aware of any active campaign to push the use of roofing and building papers.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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J. NEWELL STEPHENSON, M.S., Editor.

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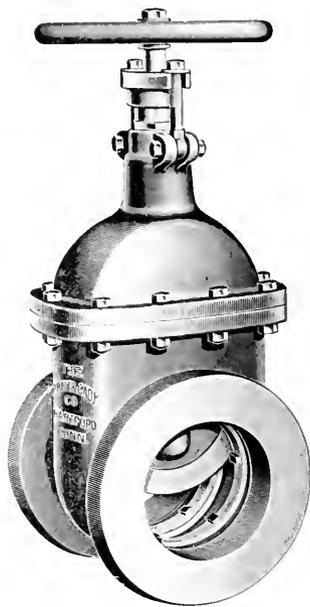
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EDITORIAL

LESSONS FROM THE SAFETY REPORT.

On another page of this issue we publish the annual reports of the president and the secretary of the Ontario Pulp & Paper Makers' Safety Association. This organization has been laboring for several years with great energy and considerable success to reduce the number of injuries, temporary, permanent and fatal, to the workmen in Ontario mills. The present report in some respects might seem to contradict this statement in that the total number of accidents in the past year was greater by 36 per cent than the number in 1918 of the total number of non-fatal accidents and the number of fatal accidents increased from 7 to 11 or about 57 per cent. The time loss resulting from these accidents increased almost 31 per cent. On the face of it this would seem to indicate that no progress had been made but that, on the contrary, conditions are worse now than they were a year ago.

It is necessary, however, to take into consideration two factors which do not appear in the figures. In the first place the number of employees has increased, although not in as large a ratio as have the accidents. In the second place it will be found on reading the report that 50 per cent of the increase in accidents is the result of happenings in three mills, and that three mills are responsible for 50 per cent of the increase in time loss because of accidents, and that 30 per cent of the time loss was experienced by the employees of two companies. We have not been advised as to the names of the mills or companies who are responsible for this serious laxity in regard to the prevention of industrial accidents, but we note that the merit system of rating the assessment for workmen's compensation will, in a measure, penalize them for their slackness in allowing such conditions to prevail as are reflected in this statement. Unfortunately the Workmen's Compensation Act will not soothe the pain of a crushed finger nor return to the family circle the bread winner whose death might have been prevented by better safeguards on his machine or the insistence on greater carefulness in and about the mill. We believe that a mill which does not maintain a safety organization and strive continually to educate employees to the necessity for eternal vigilance and proper habits is as criminally negligent as the mill which fails to provide for guards on elevators and lights on stairways.

It is only by a continued campaign of education and co-operation which is necessary to unite employer and employee in this important work that progress can be made. The result of the last year's work of the association is much less discouraging if we leave out the effect on the figures of the accidents and time loss in the three guilty mills. This of course, is not intimating that other mills could not have done better, for we know they could have done better, and we believe that during the current year laboring conditions will be improved to such an extent that next year's report will be much more encouraging than the one before was.

One of the pleasing features of Mr. Costiganes report is the statement in regard to the general improvement in sanitary conditions in the mills and particularly his reference to the appreciation of the improvements by the majority of the workmen. We believe that it is just as difficult for workmen to learn proper habits of health and sanitation and safety in an ill kept, unsafe, unsanitary mill as it would be to succeed in a musical career with nothing to practice upon but a broken-down, out-of-tune, piano. Of course, workmen will respond to sincere efforts to make their work and conditions of labor more healthful, cheerful and safe. Of course, there are some who have been popularly called "rough-necks" who will not respond to such efforts, but their number is comparatively small, and they are not at all typical of the Canadian workman. The appeal for Safety First co-operation and for improvements in the habits of the men themselves must be addressed to the sound-minded, steady Canadian workman who is, and will continue to be, the greatest asset of the country. He will be glad to co-operate with the progressive manufacturer, largely because it is in his interest to do so and it is in the manufacturers' interest to do a little more than his share, if necessary. In fact, it is his duty to make every effort to improve working conditions even if there were no financial return connected with it. The rebates which the merit system has made possible to a number of mills that have exerted themselves to improve conditions and reduce accidents shows that an effort pays in dollars and cents, and it must pay an even greater return in the feeling of security and satisfaction that must come to the workmen who are employed in plants where these real efforts are made.

Our mills have not yet begun to realize the possi-

bilities in connection with the Safety First movement. The results of the work of the Ontario Association shows the need for, and the value of, such an organization as this. Canada must begin to realize the need for a widespread safety movement, and to be in a position to make progress nationally along these lines. Many mills not in the Ontario organization are doing excellent work, but their successes and their failures are not known, even anonymously, to the other mills in the same line of work and so their experience is of no value to anyone but themselves, and the experience of others is not available to them. There is no mass movement in this important direction, and it is to be hoped that the paper mills and perhaps associated industries throughout the Dominion can soon be united in some organization that will do for the Dominion what the Ontario Association is striving to do for the mills of that province. Such an organization would be worth while if it did nothing but succeed in securing a higher standard of paper making machinery, and succeed in having the manufacturer provide his machinery with suitable safety devices before its installation in the mill. There seem to be indications of the possibility of some such organization and we strongly urge those in a position to promote it to assist in every possible way. It is greatly needed, and it cannot be achieved too soon.

GETTING BACK TO NORMAL CONDITIONS.

The Boston News Letter analyses after the war conditions in trade following the Civil War in the United States and the Napoleonic Wars as affecting Great Britain. In the first case it was found that commodity prices declined gradually for thirteen years following 1866, but that the drop in any one year did not exceed 9 per cent; in the other case the maximum drop was a little over 11 per cent in one year, and the decline was spread over a number of years. The paragraph notes that a very considerable decrease has already occurred in some basic materials, and intimates that a continued rapid decline must not be looked for.

Reports seem to indicate a gradual return to normal conditions, and that trade is being re-established. In England there are, of course, conditions to be considered that have not confronted the papermakers on this side, and yet even there we find considerable paper being offered at prices that indicate a return to normal and stable conditions. It will naturally be some time before all the stocks that were bought at high prices have been disposed of with any degree of advantage to the holders as paper is beginning to come on the market, or at least is in sight, that will have been produced from much lower priced raw materials. The situation in this regard seems to be quite different on the other side than it is here and in the United States, where jobbers have apparently been able to keep their stocks pretty close to a mini-

num and to dispose with fair promptness of their higher priced materials. In fact they are living closer to the mills, and the mills are living closer to their raw materials.

While the recent prices for pulp and paper have been primarily due to the high costs of raw materials it would seem that the demand for limited supplies has enhanced the value of such material as has been available. This condition is to some extent changed at the present time, and there is apparently a closer balance between supplies and requirements. This is due both to an increase in capacity for production and distribution and to a distinct curtailment of purchases in several lines of the trade. Indications seem to point to very little chance for any lowering of wages, with rather more than a possibility that there will be increases in some lines, at least increases in cost of unit production as far as the labor factor is concerned. The only solution of this problem is more efficient organization and equipment.

Large orders for timber and textile products have been placed in Canada recently for export to Great Britain and a large credit has been established in Romania for Canadian products and some materials in Italy and France. A period of increased activity in the building trades is imminent, and altogether there is every evidence of increased and continued employment for some time to come. There are some demands noted for Canadian papers in the export market, and, of course, we look for greater activity along this line. Taking a broad view of the industrial situation it seems that, even with a number of unencouraging factors, the general aspect of the matter is a challenge to go firmly forward and make every effort to place business so that there will be more opportunity to do business. Hesitation will get us nowhere. Business is built on faith, and this is no time for doubting. Canadian business has a sound foundation and a bright future. Let us go forward in that belief.

FAITH IN LABOR.

"I hear people talking Bolshevism, but such thoughts roll off my back like water off a duck's, because I, personally, have known personally more of the men I have been working with than many so-called employers, and I have yet to meet, in any plant with which I have been associated, a man with whom I could not sit down and reach a fair decision as regards his relation to myself. That is the spirit of the Spanish River Pulp and Paper Mills, I hope, to-day."

"I have also tried to see all sides of labor, and I never had a plant with which I was connected, down for a single hour, until last summer. I hope it will be my good fortune never to go through a similar experience in any concern with which I have the slightest connection.

"The operating policy of this company is to organize through Spirit and Enthusiasm to the point of Maximum Efficiency.—Pres. G. H. Mead, at the Banquet of the Spanish River Pulp and Paper Mills.

Ontario's Pulp and Paper Mill Accidents

The annual meeting of the Ontario Pulp and Paper Makers' Safety Association was held on Tuesday, April 15, in the board room of the Provincial Paper Mills Co., Limited, Toronto. I. H. Weldon, President of the Association, presided, and there was a good representation from Ontario mills, both in person and by proxy.

The report of A. P. Costigane, reviewing the progress and development of the work for the past year, was optimistic and comprehensive. While an increase in the number of accidents was reported, it was shown that the aggregate of workers in the mills was very much larger, and that the added number of accidents was not in anything like as great a proportion as the increase of full year workers during the same period. Mr. Costigane dealt encouragingly with different phases of the work, both from a humanitarian and business point of view, and referred appreciatively to the co-operation and support extended him during the year just closed.

President Weldon also dealt in his remarks with some aspects of safety work, and the particular attraction of the merit rating system of assessment. The reports of Mr. Weldon and Mr. Costigane follow:

The officers elected for the coming year were:

President—I. H. Weldon (Provincial Paper Mills Co.), Toronto; Vice-Chairman—George Carruthers (Interlake Tissue Mills), Toronto; Secretary and Safety Engineer, A. P. Costigane, Toronto; Directors—H. I. Thomas (J. R. Booth), Ottawa; Col. C. H. L. Jones (Spanish River Pulp and Paper Mills), Sault Ste. Marie, Ont.; C. B. Thorne (Riordon Pulp & Paper Co.), Hawkesbury; R. S. Waldie (Toronto Paper Mfg. Co.), Toronto, and C. Nelson Gain (Don Valley Paper Co.), Toronto.

The Chairman's Report.

The report of I. H. Weldon, President of the Association, was as follows:—

Reviewing in my own mind the period since our last annual meeting, it seems to me that it is imperative to promote closer co-operation between the operative personnel and the executive of each of the mills, in reducing accidents and improving general conditions of employment, and the instrument ready to our hand, viz.: Ontario Pulp and Paper Makers' Safety Association, which is doing so much to establish confidence and mutual respect between employer and employe, should receive our whole-hearted support.

Anyone who has studied even superficially the problems of the reduction of accidents will be forced to the conclusion that the best results are to be obtained by the education of the employees to take care of themselves. Of course it is necessary to safeguard physical hazards to prove good faith, and this must always be the first step taken, otherwise the employees would be justified in questioning the sincerity of the movement. The directors of this Association are convinced that the best results can only be obtained along educational lines, and the report of our Secretary and Engineer shows that a large portion of his time has been devoted to efforts in this direction. We hope that during the current year that even more time will be given to this important phase of the work.

Education, which is one of the lines of activity of this Association, bulks largely as a means of solving

the problem of industrial unrest, by making it possible for the rank and file of employes to so equip themselves as to be ready when opportunity offers to take a higher place in the industry, by rousing the personal ambition of every employe and so give the death blow to the present tendency to retard production to the speed of the least efficient individual, and by encouraging good men to become better. Unfortunately there are no suitable text books on the pulp and paper industry, so that up to the present there has been very little effort at self-education, as there was no reliable source of information accessible to those engaged in the industry. This want has been recognized by the industry and a joint committee of the Canadian and American mills is now engaged in working out a plan whereby a complete set of text books covering all departments of the industry will be produced and brought within the reach of every employe.

The tendency of industry in every line is towards greater standardization, greater efficiency and the elimination of waste, through the application of scientific methods to production problems. Up-to-date machinery is more and more taking the place of muscular effort, but not the place of brains, which are now more than ever being sought by far-sighted managers. The complicated modern mill calls for brain workers rather than muscle workers. Muscle workers there always will be, and this class of labor will always be low paid (comparatively speaking) because it is so inefficient. The text-books referred to above should make it possible for muscle workers, by night classes, or correspondence instructions, to so improve themselves that they will pass from the muscle working class to the brain working class, and enjoy increased remuneration for their services.

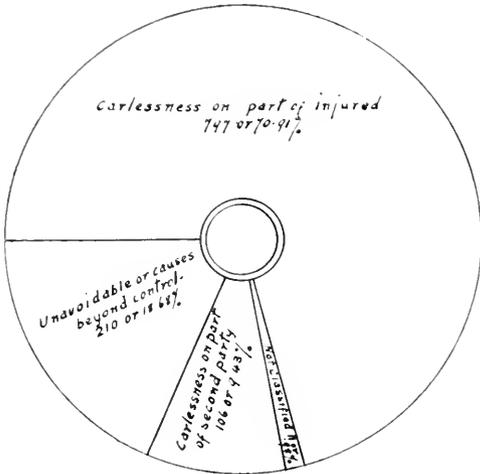
While reading over an advance copy of the Secretary and Engineer's report, I noticed that two new features of the Workmen's Compensation Act are now in force, viz.: Medical Aid, and the Merit Rate method of assessment. The former added \$6,639 to the cost of compensation for the year 1917, but as the Medical Aid Amendment to the Act only came into operation on July 1st, 1917, the figure I have quoted only covers medical aid for the second half of the year. The figure for 1918 is not yet available, but in any case will be materially larger than 1917, as it will cover a full 12-months period.

The Merit Rating system of assessment is more equitable than the pool system formerly in use. Under the new system each firm's assessment is regulated by the cost of their own accidents. If a firm's accidents are low a refund is made, if too high, a supplementary assessment has to be paid. During the year Merits issued numbered 20, and amounted to \$7,517.10; the Demerits issued numbered 6, and amounted to \$4,855.64. The former were issued to those firms whose record of accidents entitled them to a rebate and the latter to those firms whose record of accidents called for a further contribution to cover the cost. Twelve firms came out square, receiving neither a merit or demerit. If the mills want to keep down their assessment, they can do so by taking every available means of keeping down their accidents.

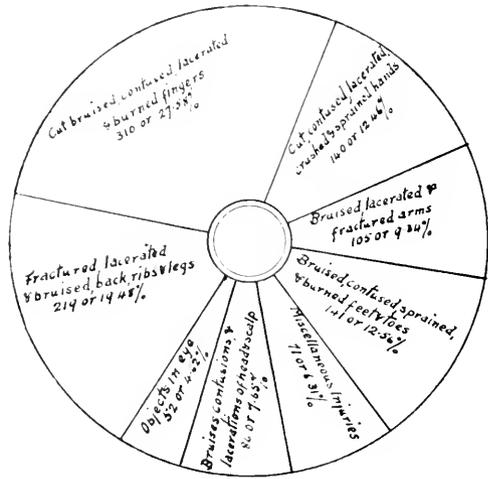
ONTARIO PULP AND PAPER MAKERS SAFETY ASSO^C

ACCIDENTS 1918

EXCLUSIVE OF WOODS OPERATIONS



PRINCIPAL CAUSES OF ACCIDENTS



EFFECTS

Finance.

The audited statement, copies of which have been distributed, shows that the affairs of the Association have been carried on very economically. After allowing for increased salary, transportation, and hotel accommodation, we are still about \$500 per year below the figure which it cost us as a member of the Federation of Safety Association.

Secretary and Engineer's Report.

A. P. Costigane, Secretary and Engineer of the Association, in his general review, said:

The year which has recently closed, 1918, has been one of great activity, expansion and progress in accident prevention and welfare work. There is now hardly a mill in Ontario of any size which does not appreciate in a greater or lesser degree the importance of this work in promoting a more friendly feeling a more friendly feeling between employers and employees, and at the same time making for greater efficiency in the everyday work of the mills. The reiteration of the principles governing this movement has had a marked effect on employees who are now beginning to realize that by supporting the movement they are helping to improve their own conditions of employment, reducing the danger of physical injury and pushing into the background the anxiety of

wife and family for the safety of the bread winner.

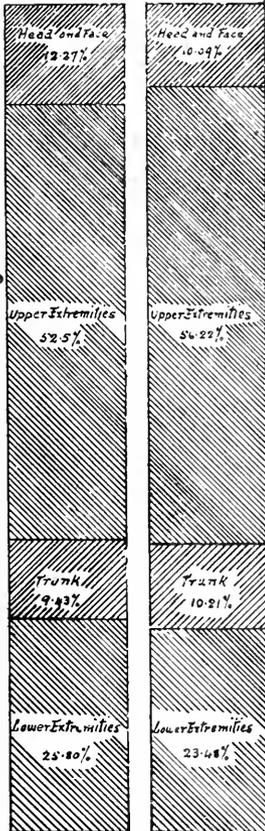
Another gratifying feature of the work is the improvement in personal cleanliness and habits of the employees in those mills where up-to-date toilet accommodation and wash rooms have been provided. The cost of such improvements is amply repaid by the higher moral tone of those benefitted. Remarks made to the writer by workmen, during his visits to mills, has convinced him that all such improvements are really appreciated by the majority of the men, although sometimes the acts of a few irresponsible and morally depraved men give the opposite impression. Instead of being discouraged by isolated acts of vandalism, the management of the mills should, for the protection of their right-minded employees, endeavor to eliminate those who persistently delight to wallow in dirt and filth.

The educational side of the movement was somewhat interfered with during the latter part of the year owing to an epidemic of Spanish Influenza, which claimed victims all over the province. The program of activities in this direction had in consequence to be greatly curtailed. Safety rallies were held at Hawkesbury, Iroquois Falls and Cornwall. The program of meetings included the presenting of special safety films depicting in telling story form the causes

ONTARIO PULP AND PAPER MAKERS SAFETY ASSOCIATION

ACCIDENTS - 1917 AND 1918

EXCLUSIVE OF WOODS OPERATIONS



Total number full year workers 1917 - 6792
 1918 - 7065
 Total time lost 1917 - 16249 days
 1918 - 18450
 Time lost per full year worker 1917 - 2.1 days
 1918 - 2.63

Fatal Accidents Not Included Below

Caught in Rope drive	1
Struck on head by block of wood from conveyor	1
Caught in conveyor	1
Drowned	1
Slide of block pile	2
Caught in shafting	1
Total	7

Percent of Total Injuries

1918	1917	1917	1918
Head and Face			
45	31	Head	3.64
1	0	Ears	0
40	27	Face	3.17
0	1	Neck	.12
52	27	Eyes	3.17

Upper Extremities

35	30	Shoulder	3.57
86	54	Arm	6.34
19	27	Wrist	3.17
140	106	Hand	12.44
310	262	Thumb	30.75
		Finger	27.58

Trunk

12	8	Chest	.94
35	44	Back	5.16
14	13	Ribs	1.53
16	10	Side	1.17
5	7	Abdomen	.82
6	4	Hips	.47
6	1	Groin	.12
7	0	Lungs	0

Lower Extremities

109	55	Leg	7.43
40	25	Ankle	2.93
45	31	Foot	3.51
46	29	Toe	4.09
Total	1124	Total	100.00

Fatal Accidents Not Included Above

Drowned	2
Struck by flying piece of bark knife	1
Crushed between car and post	1
Slide of block pile	1
Electrocuted	1
Caught under sprocket of wood conveyor	1
Handling winder shaft	1
Collapse of pulp pile	1
Fall from pulp pile	1
Caught in plater	1
Total	11

and effects of accidents. It is proposed during this year to further expand educational work, and if the loan of films can be arranged your engineer proposes to take a tour round the western mills, holding a meeting at each stopping point, and stimulating interest by the exhibition of films and suitable addresses to mill employees.

A meeting of Safety Engineers and those interested in Safety in the mills was held at Ottawa last March, but unfortunately was not so well attended as it should have been considering the excellent program

provided. It is proposed to hold a similar meeting during this summer at a western point, possibly Port Arthur. Up to the present all meetings of this nature have been held at eastern points, and it is felt the next meeting should be in the west, to give the mills located there an opportunity to be represented in greater numbers.

During the year the following meetings and conventions were attended by your Engineer:

- (1) Summer meeting of the Technical Section.

2. Meetings of Education Committee, Technical Section.

3. Annual Convention, National Safety Council.

The National Safety Council convention held in St. Louis was the most successful yet convened, in spite of war activities and adverse labor conditions, showing the enormous influence this movement is having on the industries of both Canada and the United States. The city of St. Louis entered heart and soul into the convention. Full co-operation was given by the churches, the police, the fire department, street railway, automobile owners, and all employers of labor. The result was astonishing. The week which ended with September 14th, 1918, saw 10 deaths from accidents in St. Louis. This was a normal week, for there were 510 such deaths during the calendar year 1917. The following week, that of the convention, during which everyone helped to prevent accidents, there was only one one accidental death in St. Louis, that of a drunken driver, who rolled off the seat of his motor truck to the pavement, and was killed by the fall. The wonderful safety week of St. Louis shows what may be done to save human life by a community that is willing to take the trouble. The same effort exerted in the pulp and paper mills of Ontario would soon reduce accidents to the vanishing point.

During the convention your Engineer was appointed Chairman of the Pulp and Paper Section. This appointment is a delicate compliment paid to the Canadian mills by their American brethren. This position carries with it membership of the Executive Council, in which position your Engineer will be initiated into the inner working of the Council, and should glean much valuable information for this Association, which should more than offset the expense of attending the meetings which are usually held in New York or Chicago.

Workmen's Compensation Board's Report, 1917.

The Workmen's Compensation Board's report for 1917 was issued during 1918, and contains much valuable information. An analysis of this report shows an increase in the total number of compensatable accidents in all industries from 15,690 and 281 deaths in 1916 to 20,765 and 233 deaths in 1917, equal to an increase of 32.34 per cent in non-fatal accidents, and a decrease of 17.08 per cent in fatal accidents; but a comparison of estimated payrolls shows that in the meantime the number of full year workers had increased from 271,700 in 1916 to 277,750 in 1917, equal to 2.22 per cent: so that the frequency of accidents during these two years, taking all industries together, has shown a large increase even when allowance has been made for the increase in workers during the same period.

Taking the Pulp and Paper Industry only, and including woods operations, the total number of compensatable accidents have increased from 593 and 15

deaths in 1916 to 753 and 20 deaths in 1917, equal to an increase of 26.98 per cent in non-fatal accidents, and an increase of 33.3 per cent in fatal, but during the same period the total number of full year workers has increased from 5,600 in 1916 to 9,650, equal to 72.32 per cent, showing that as far as the Pulp and Paper industry is concerned the increase in the total number of accidents was not in anything like as great a proportion as the increase of full year workers during the same period.

The time loss increased from 14,569 days in 1916 to 21,094 days in 1917, equal to 44.1 per cent, showing that the severity of accidents was considerably on the increase.

The total amount collected from class 2 was \$119,367.31, including 8,170.05 carried forward from 1916. Of this amount \$29,148.79 was paid out in actual compensation, \$25,494.29 was taken as the capital value of pensions awarded, \$200 was held for deferred compensation, \$3,319.50, paid for medical aid, \$17,177.82 for continuing disability, \$18,005.23 for outstanding accidents, \$932.56 for disaster reserve fund, \$3,933.47 paid to Safety Association, \$888.01 for administration expenses, \$3,319.50 for estimated medical aid, making a grand total of \$102,419.17 charged against the class, making a credit balance of \$16,948.14, to be carried forward to 1918 report.

On the basis of the total amount charged against the class every \$100 contributed by the employers would be divided as follows:

	1917.	1916.	1915.
Compensation other than pensions	\$ 28.46	\$ 24.44	\$ 32.32
Deferred obligations	60.35	69.29	59.07
Paid to Safety Associations	3.84	3.85	1.63
		(incomplete year).	
Administration expenses . . . . .	.87	2.42	6.98
Medical aid	6.48	.....	.....
		(incomplete year).	

\$100.00 \$100.00 \$100.00

Accidents Reported During 1918.

The total number of accidents exclusive of woods operations reported by the mills during the year 1918 was 1,124 non-fatal, and 11 fatal accidents, compared with 852 non-fatal and 7 fatal for the year 1917. This means an increase of 36.24 per cent in non-fatal and an increase of 57.14 per cent in fatal accidents. During the same period the total number of full year workers increased from 6,792 in 1917 to 7,064 in 1918, or an increase of 4 per cent.

The total time lost increased from 14,249 days in 1917 to 18,650 days in 1918, an increase of 30.88 per cent, showing that the increased severity of accidents greatly exceeded the increase in full time workers.

Comparison Table 1916-1917. All Industries.

Accidents (non-fatal)		Ine.	Accidents. (Fatal),		Ine.	Dec.	Full Year Workers.			Time Lost. (In Days)	Time Lost per full yr. worker (in days).		
1916.	1917.	1917.	1916.	1917.	1917.	1917.	1916.	1917.	1917.	1916.	1917.	1916.	1917.
		%			%	%			%				
15,690	20,765	32.34	281	233	.....	17.08	271,700	277,750	2.22	447,183	.....	1.64	.....
Class 2 (Pulp & Paper Mills) only including Woods Operations.													
593	753	26.98	15	20	33.3	.....	5,600	9,650	72.32	14,569	21,094	2.60	2.18

Comparison Table, 1917-1918. Class 2.												
Accidents Non-fatal		Inc.	Accidents (Fatal)		Inc.	Full Year Workers		Inc.	Time Lost (In Days)		Time Lost per full yr. worker (In Days)	
1917.	1918.	1918. %	1917.	1918.	1918. %	1917.	1918.	1918. %	1917.	1918.	1917.	1918.
852	1,124	36.24	7	11	57.14	6,792	7,064	4	14,249	18,650	2.1	2.63

At first sight these figures appear discouraging, but analysis of the reports of each mill reveals that increases in accidents are confined to a few mills and decreases have been shown in nearly all mills where accident prevention has been vigorously pushed.

50 per cent of the increase in the number of accidents is due to 3 mills; 50 per cent of the increase in the time lost is due to 3 mills; 34 per cent of the increase in the time lost is due to the operations of 2 new companies.

For the past year or two the problem of securing an adequate supply of labor to carry on successfully has occupied the attention of the management of the pulp and paper mills of Ontario, and while the scarcity of labor interfered to a large extent with the carrying into effect of improvement programs, still the situation has been beneficial to the industry in that it has caused the employers to give serious attention to the necessity of safeguarding the lives and limbs of their employees, and the improvement of working conditions generally. In some of the leading mills not only has the safeguarding of physical hazards received attention, but sanitary conditions and welfare problems have been studied, resulting in much needed improvements being effected. To those firms who have not yet grasped the significance of the Safety Campaign, the writer makes an earnest plea for their active co-operation, not only on the humanitarian basis, but also on the basis of self-interest. Under the new system of Merit Rating adopted and put in practice during 1918 by the Workmen's Compensation Board, each firm is more or less financially liable for its own accidents (although not removing the collective responsibility of the group). At the end of each year an adjustment is made whereby those firms whose year's accidents did not cost the amount of the assessment receive a merit refund; on the other hand, firms whose accidents cost more than the assessment would warrant are called on to pay a further demerit assessment. Is it not better to spend more money every year in improving the plant, from which expenditure some benefit will accrue, rather than spend the money in compensation for injuries to employees from which no benefit can accrue, either to employer or employee, and oftentimes leaves the residue of partly maimed workmen, whose decrease of efficiency is a burden on the industry?

Another aspect of the results of accidents which should carry weight from the financial point of view is the cost of interruption and replacement due to injuries. It will be readily admitted that this handicap on industry does exist, although it is looked on as a more or less intangible factor, and not capable of determination. In the writer's opinion this cost can be determined. When an employee is fatally or seriously injured in any plant there is bound to be almost a complete cessation of work by fellow employees in the immediate vicinity of the victim. A certain number will drop their work to give aid and will remain with the injured man until he is removed to the hos-

pital—sometimes accompanied by one or two of his friends. After the removal of the victim there will be further interruption to the work owing to the witness of the accident discussing among themselves, and with others the details of the occurrence. Following this, much time and energy is expended officially in investigation, interviewing, witnesses, examining conditions, etc., and in the event of an inquest, the attendance of all officials directly or even remotely responsible for the occurrence. A value can be put on all these interruptions, and when such figures are compiled the total will be astonishingly high even when the reduction of output is not taken into consideration or the cost of training a new man to take the place of the victim. From the point of view of the humanitarian or the hard-headed business management it pays to co-operate actively in keeping accidents to the minimum.

TEACHERS GET LESS THAN SCRUB-WOMEN.

The Scientific Monthly reviews the need of action as provided in a bill before Congress for a National Department of Education concludes as follows: Every line is a lesson to Canada.

The importance of the problem of Americanization, it is held, has been emphasized repeatedly during the war and is self-evident from the fact that there are now 13,000,000 foreign born in this country. Not only many of these, but many of the native born, apparently are ignorant of their duties and responsibilities as citizens.

Advocates of the bill insist that it is essential in any form of constructive legislation to meet the illiteracy peril, that provision be made for the government to assist the states in paying adequate salaries to teachers, and that more teachers, well-trained, be provided. Referring to the fact that there are 22,000,000 children of school age in the United States, a brief laid before the House Committee in behalf of the American Federation of Labor, the American Federation of Teachers and the National Association said:

The Bureau of Education reports that the average annual salary paid teachers in this country in 1918 was \$630.64, which is \$243 less per annum than the average wage paid to scrub-women in the United States navy yard. Is there any wonder that results are not always satisfactory? Inefficient schools are almost invariably the result of inadequate support. Low salaries are driving many good teachers out of the profession and filling the ranks with the immature, inexperienced and untrained.

Of the 600,000 teachers in America 100,000 are less than twenty years old; 150,000 have served two years or less; 30,000 have no education beyond the eighth grade; 200,000 have had less than a high school education. Our government has been accused of giving more thought to agriculture and commerce than to education; more attention to livestock than to children.

Trade Enquiries

Canadians interested may receive further information by addressing Department of Trade and Commerce, Ottawa, giving number of item.

135. **Strawboards and leatherboards.**—A Newcastle firm are interested in importing the above in carload lots as soon as conditions permit.

137. **Strawboards and pulpboards.**—A Hull firm are prepared to place orders in ten to fifteen-lots for strawboards and in five to 10-ton lots for pulpboards as soon as conditions permit.

139. **Paper and cardboard.**—A Leeds firm would like to receive offers on the above with samples as soon as conditions permit.

142. **Strawboard.** A Bradford firm wish to receive offers and samples of the above with a view to business as soon as conditions permit.

259. **Wood-pulp board.** A Bristol concern who are large buyers of wood-pulp board, to weigh in the size 40-inch by 15-inch above 180 sheets to the hundred-weight, desire quotations for a contract of 100 to 150 tons per annum, delivered in lots of 10 tons per month.

303. **Pulp board and strawboard.**—A Leeds firm is interested in the above with a view to future business.

324. **Wall paper.**—A Durban commission house is prepared to take up the representation of a Canadian wall paper house for Durban and district.

351. **Pulp.**—An influential firm in Manchester wishes to hear from a mill in a position to export large quantities of pulp.

388. **Pulp boards.**—A Bristol firm wishes to be put in touch with a house in Canada manufacturing pulp boards for interior work.

428. **Paper and raw furs.**—French firm in touch with manufacturers and traders in Lyons and eastern part of France would like to act as agent for Canadian exporters of paper and raw furs.

446. **Paper.**—Experienced printer now wishing to go into the paper business, having a good clientele in Normandy, desires to represent Canadian manufacturers of printing paper, bookbinding paper, wrapping paper, carbon paper etc.

455. **Wood-pulp.**—A Genoa representative wishes to get in touch with Canadian houses prepared to export wood-pulp.

456. **Wood-pulp.**—An important firm of commission agents in Genoa would welcome correspondence from Canadian houses desirous of opening trade with Italy in wood-pulp.

457. **Wood-pulp.**—A firm in Turin which imports raw material for Italian paper-makers would like to hear from Canadian houses exporting wood-pulp.

458. **Wood-pulp.**—Paper-makers at Turin inquire for Canadian wood-pulp.

459. **Wood-pulp.**—A Turin firm of paper-makers seeks connections in wood-pulp with Canada.

460. **Wood-pulp.**—An important firm manufacturing paper at Turin is anxious to obtain supplies of wood-pulp from Canada.

461. **Wood-pulp.**—Paper-makers at Verzuolo, Italy, wish to purchase Canadian wood-pulp.

462. **Wood-pulp.**—An important firm manufacturing paper at Fabriano, Italy, would handle Canadian wood-pulp.

463. **Wood-pulp.**—A firm of important merchants at Genoa, Italy, would be glad to enter into relations with Canadian wood-pulp firms.

464. **Wood-pulp.**—A Milan, Italy, paper-maker would be glad to hear from Canadian wood-pulp exporters.

465. **Wood-pulp and paper-making machinery.**—A Genoese firm of representatives would handle Canadian wood-pulp and paper-making machinery.

507. **Cardboard.**—A Bristol box manufacturer desires to import cardboard from Canada.

510. **Paper and board.**—A London paper agent, claiming an established connection among wholesale stationers and paper merchants, wishes to secure the agency for Canadian manufacturers of paper of all classes, and also of manufacturers of board, particularly folding box and cheap greyboards. He would like to receive samples and other information from manufacturers, and is prepared to visit Canada to make arrangements.

560. **Coated book paper.**—Probably the largest importer of paper in Japan is anxious to obtain 2,000 tons of coated book paper—sizes 25 by 37 and 31 by 43; weight about 60 pounds. In January, 1918, this paper sold at about 41 cents e.i.f. Yokohama; in December, 1918, it sold at 19 cents e.i.f. Yokohama. Canadian mills can therefore see the great increase in the cost of this paper, and can also estimate whether they can compete with these prices. Samples can be seen on application at the Commercial Intelligence Branch, Department of Trade and Commerce, Ottawa.

561. **Cloth book-cover paper.**—A large firm of importers in Japan is very anxious to hear from Canadian mills manufacturing book-cover paper such as Interlakin paper. Samples of this paper may be seen on application to the Commercial Intelligence Branch of the Department of Trade and Commerce, Ottawa.

562. **Book-cover paper.**—A Tokyo firm desires to receive samples and quotations from Canadian mills manufacturing plain book-cover paper of all colors. Samples of the kind of paper required may be seen on application to the Commercial Intelligence Branch of the Department of Trade and Commerce, Ottawa.

563. **Grease-proof paper, vegetable parchment and onion-skin paper.**—A large paper importer in Japan is anxious to receive samples and quotations from Canadian mills manufacturing the above. The usual size demanded on the Japanese market is 20-inch by 30-inch. Large quantities of this kind of paper are sold annually. Samples of the above paper can be seen on application to the Commercial Intelligence Branch of the Department of Trade and Commerce, Ottawa.

564. **Writing paper.**—A Tokyo firm which is a large importer of foreign writing paper into Japan is anxious to receive quotations from Canadian mills manufacturing high-class bonds. Samples showing the bond which is very popular amongst the Japanese, can be seen on application to the Commercial Intelligence Branch of the Department of Trade and Commerce, Ottawa.

567. **Paper.**—A Liverpool wholesale paper distributor desires to secure the sole agency for paper mills making book and writing paper, newsprint, wrapping paper, etc.

596. **Wood-pulp.**—A Leith firm, who are large importers of raw materials for paper-making, wish to secure the exclusive Scotch agency for easy bleaching or soda or sulphite pulp, and strong sulphite pulp, for a good Canadian mill with a view to business as soon as conditions permit.

645. **Paper and printing.**—Genoa, Italy, representative handles on commission paper, office sundries, printing inks (colored), paints and varnishes.

673. **Paper.**—A dealer in paper in Paris wishes to get supplies of book paper, wrapping paper and fine paper. He wishes to receive samples from Canadian manufacturers.

689. **Wall paper.**—Inquiry is made by a manufacturer's agent at Antwerp for names of Canadian paper manufacturers able to supply paper to be printed as wall paper.

694. **Wood-pulp.**—One of the oldest and most important paper-makers of Italy desires to place orders in Canada for wood-pulp.

720. **Agency.**—A Genoa, Italy, representative would handle on commission piece-goods in general and haberdashery.

782. **Wood-pulp paper.**—A British firm wishes to get in touch with a Canadian manufacturer of wood-pulp paper suitable for a foundation for roofing felt and paper suitable for underlining carpets.

788. **Sulphite board.**—A London firm would be glad to hear from Canadian manufacturers who can supply sulphite board for containers and boxes, in large quantities.

824. **Cardboard.**—A Glasgow firm wishes to get into touch with Canadian exporters of the above.

829. **Boxboard.**—An Edinburgh firm wishes to get into touch with manufacturers of boards suitable for making folding boxes and cartons.

WOOD PULP STOCKS LARGE IN U. S.

Comparing the stocks on hand at the American pulp mills at the end of March, with their production the Federal Trade Commission reports:

Groundwood mill stocks equal slightly more than 28 days output.

News grade sulphite mill stocks equal about 13 days' output.

Bleached sulphite mill stocks equal slightly more than 10 days' output.

Easy bleaching sulphite mill stocks equal about 14 days' output.

Mitscherlich sulphite mill stocks equal slightly less than 10 days' output.

Sulphate mill stocks equal about 21 days' output.

Soda pulp mill stocks equal about 7 days' output.

Mill stocks of other than wood pulp equal about 5 days' output.

Loss of production was very large during March, chiefly on account of lack of orders, repairs, lack of material and lack of power.

William Dyson, secretary of the Amalgamated Society of Paper Workers, England, states that many members of the Union are idle because returned soldiers are given their jobs. He makes no complaint to this, but strongly objects to letting down the bars on American and Canadian paper when English mills are running about 50 per cent of their capacity, compared with full time on the other side, just to furnish cheap paper to the publishers: who are talking very loudly about using British made goods. He says fair competition is thus impossible.

H. W. Appleton, formerly with Robert W. Hunt & Company, and recently Works Manager, Toronto Plate Glass Importing Co., has joined the staff of Burns & Roberts, Ltd., railway and contractors' equipment, Toronto.

CANADIAN FORESTS AS AN IMPERIAL ASSET.

Robson Black, Secretary of the Canadian Forestry Association, contributes an excellent article of fifteen pages to the University Magazine for February. He refers to the activities of Canadian foresters in Europe and to the suddenly developed aeroplane spruce industry in British Columbia. He has considerable also to say on the wonderful development of the pulp and paper industry, whose exports have increased in eighteen years from \$122.00 to about \$100,000,000.

Lumbering is not only Canada's most widely distributed industry but one which is the country's greatest employer and, with pulp and paper making, holds more capital and distributes more wages than any other Canadian industry. Lumbering has opened up large agricultural and grazing areas and has supplied winter employment for thousands of farmers who were getting a start with their new endeavors.

In spite of the largeness of the lumber business and its importance as a nation industry, many lumber companies are finding themselves without sufficient timber supplies, particularly white pine, and pulp companies also are becoming handicapped because of the depletion of accessible timber areas. Some of our provinces have allowed their timber supplies and lumber business to become almost a matter of history and yet the public is not awake to the necessity of protecting what forests are left from the ravages of fire and insects, and of providing for the continuation and even of the increase of a supply of timber for future generations. Our major industries, such as mining, fishing, agriculture, construction and many manufactures are large consumers of wood, to an extent which is certainly not appreciated.

It is stated that two-thirds of the Dominion is incapable of producing other than timber crops, and that with a start of 200 years in agriculture, only nine out of the 200,000,000 acres in Quebec are being farmed and this ratio cannot be seriously changed by agricultural expansion. Near 70 per cent. of New Brunswick is fitted only for timber growing. In regard to the political apathy so prevalent in regard to conservation of forest resources in this country, Mr. Black says, "Dead timber lands tell no tales," and so the politician gets by. In another place he says that probably two-thirds of the original inheritance of forests have been uselessly burned. The author adds a few comments showing how much greater our forest resources were in the various provinces in generations gone by than they are to-day. He says that in Saskatchewan, 7,000 square miles in one piece of non-agricultural land has been completely stripped by fires, and that one forest fire ran 450 miles across the Province of Manitoba. It is strictly the lack of fire prevention that has made our prairie provinces the treeless wastes of to-day.

Mr. Black points out the essential differences and conditions between forestry problems in Europe and those in Canada, and shows that the enormous cost of lumbering operations and distances from markets is largely responsible for the waste in woods operations. The article is concluded by a summary of the ravages of fire and the enormous consequent expense of life and property. He might also have mentioned the landslides, floods, bare hillsides and buried valley lands caused by ill considered stripping of forests where trees should have been left to hold the soil.

It is to be hoped that Mr. Black's review of the situation will be read as widely as it deserves and

that public opinion will demand and support adequate provision for the maintenance of Canada's forests in the place they have to hold in the economies and resources of the Empire.

This article has been reprinted as an attractive 16-page pamphlet by the Canadian Forestry Association, Booth Bldg., Ottawa, and may be had on application.

CONTINUES WAR LABOR BOARD'S WAGE AGREEMENT.

At the second meeting between the newsprint manufacturers and the International Brotherhood of Paper-makers, held at the Murray Hill hotel in New York, most of the manufacturers favored the idea that the question of any increase in wages or labor cost cannot be intelligently or fairly decided under the economic and industrial conditions now prevailing. The consensus of opinion among them was that there should be a reasonable postponement of decision on the questions raised. In a bulletin sent out under date of April 21, the International Paper Company defines its present position and future attitude in its relations with its employees as to working conditions and wage rates which are at present controlled and regulated by the award of the National War Labor Board, dated April 27, 1918. Referring to the agreement by the manufacturers concerned and the trade unions to abide by all decisions and regulations of the Board, the bulletin says that the International Paper Company has thus far observed and adhered to said award, and that it is its purpose and intention to continue to observe and maintain the provisions and conditions of the award until a mutually satisfactory agreement dealing with the relations between the company and its employees can be substituted. Discussing the matter of the proposals made by the paper-makers, the bulletin says in part: "The trade unions having notified the manufacturers to meet them in conference for the purpose of preparing for a renewal of agreements and better understandings," to be substituted for and take the place of the award of the War Labor Board, and having submitted in advance copies of proposed changes in working conditions and wage scale, which provides for several changes in working conditions, which of themselves would create large increases in existing labor or wage cost, the company takes the position that the question of any increase in wages or labor cost cannot be intelligently or fairly decided under the economic and industrial conditions existing now, and so far as it can judge, likely to continue for a considerable time. In view of the fact that the National War Labor Board's awards are still in effect, and are meant to be until peace has been proclaimed by the President of the United States, the company declares its intention to observe and carry out the War Labor Board's award for the full period for which it provides and if no mutually satisfactory agreement has been made in the meantime, until May 1, 1920. The company also declares its intention and willingness to enter into the negotiation of, and if possible agree on, terms and conditions of employment and wage rates, to take the place of the existing award of the War Labor Board, dealing with such subjects, not later than 30 days after a proclamation of peace by the President of the United States."

MEIGS PULPWOOD COMPANY OPENS OFFICE.

The Meigs Pulpwood Company, Inc., of New York, have opened up offices in the McGill Building, Montreal, forging another link in their organization for the production of pulpwood throughout Canada generally, and particularly in New Brunswick, and the Province of Quebec. The Meigs people have been in the pulpwood business for many years in the Adirondacks, in Vermont, and in different parts of the United States, and have been operating in Canada for a number of years in a most successful way, using all the modern methods of production which are being evolved from time to time. They have selected only such districts where a high grade of wood is procurable, and are carrying on their business under a guarantee which has made their product a standard for quality and weight in the pulp and paper districts of the United States, particularly the northern New York mills.

They have associated with them, looking after their Canadian business and their Canadian production, Major F. C. Shorey, who is well and favorably known in business circles throughout Canada.

Now that the war is over and business is getting down to a solid basis again, the Meigs Pulpwood Company are developing their policy energetically, and are acquiring large freehold timber limits for the production of high grade pulpwood. Up to the present time their full output has been absorbed by the American pulp and paper mills, but they hope in the near future to develop their Canadian business to a corresponding extent and along the same lines in which they are doing business in the United States.

Mr. Walter Meigs, President of the Company, has been identified with the pulpwood and lumber business for the past 20 years, his father before him having established their business many years ago, when it was in its infancy.

There is a fine opportunity for a concern of this kind to conserve the pulpwood resources as far as they control them, by careful cutting and protection methods.

HE WANTS THEM TO SEE CANADA.

At the annual meeting of Becker & Company in London, Mr. F. Becker said he wanted to see some of the boys in their office have a chance to come to Canada, and hoped to make the necessary plans.

Referring to his visit to America, Mr. Becker described the wonderful pulp producing prospects of the Dominion and mentioned the ease of the Chicoutimi Company, which had increased its production from 30 tons to 1,000 tons. This, he said, could not have been done but for Becker & Company. He described the position of the Chicoutimi Mill, and also referred to the sulphite mill at Ha! Ha! Bay.

One of the startling statements of the report was that the turnover during the past year had amounted to £4,000,000, £3,000,000 of which was for wood pulp bought for the French, British and Italian Governments, and it is a source of great pride and satisfaction to the company that this enormous business was conducted without any profit whatever to Becker & Company.

Short belts require to be tighter than long ones. A long belt working horizontally increases the grip by its own weight.

Special Meanings of Trade Terms

Last week Mr. Arthur Lucas, of the well-known English tissue paper manufacturers, R. Fletcher & Son, called on the Canadian Pulp & Paper Association. He gave Mr. Dawe a copy of the following literary gem which he contributed to the World's Paper Trade Review last summer. Some of these conditions can be laughed at now, but there was a time when it was no joke. Now we dare anyone to say that one Englishman, at least, has no sense of humor.

Paper.

A substance made from fibrous materials in sheets or webs; used for printing and writing on. When it was discovered that the war would last more than twelve months, it was deemed advisable to consider the supply of paper and material, lest it should be exhausted before the press was able to use up the amount of copy provided by Armageddon. In spite of Mr. Belloc's decimation of the German reserves, a policy of attrition pointed to exhaustion of our paper supply before the last batch of Huns was disposed of and the last rumor contradicted. Economy became necessary, and Government control quickly followed. It was some time before the discovery was made that paper was used for other purposes. Those who in 1913 used two sheets of brown easing to wrap their holiday luggage were reduced in 1918 to one sheet of small-hand cap or a 6's envelope. As there was little difference in price, many preferred a kit-bag.

"News."

Generally white; leaves the mill in large reels; reaches the public in sheets (much reduced), printed on both sides. The war could not be carried on without the daily papers; they are necessary for raising money, also show how to spend it (see advts.) Give the latest instructions from innumerable controllers—correct them; repeat them in a different form; and even advise their readers what to do with their waste paper. Intelligent anticipation in providing for their requirements enabled the press to place a list of runners at Newmarket in the hands of the public in time to be useful to bookmakers, even in the fourth year of the war.

News-Offcuts.

That part of the web not required by the press, and so sold for wrapping purposes; apparently it is run on the more expensive side of the paper machine.

Waste Paper.

In 1914 hardly worth cartage; in 1918 (see daily papers) raw material for munitions, for which every buyer offers the "extreme top prices." Production now almost a Government monopoly. Food Control Department has a fine record, so have some others, hence the abundance of munitions, and "customers will please bring their own wrapper."

Railway or "Government" Buff.

A thin glazed paper, generally received by the public through the post, in printed form, and with a reply paid envelope. Most unpopular; difficult to read, and worse to write on. Always the last letter opened; produces much thought, and spoils many breakfasts. N.B.—The small numbers on the corners have nothing to do with the Calcutta Sweep or any other lottery.

Bank Paper.

A thin tub-sized writing, made from rags; the high-

est grade is known as John Bradbury; recently the term has become so broad as to cover anything from a real bank to a thin imitation news.

Kraft.

A strong brown paper, originating from Sweden at the end of the nineteenth century. Proved itself the Jimmy Wilde of the wrapping paper world, and knocked out everything at its weight. Later it got into bad company, and had to bear the prefix "Genuine." During the Great War, like Kultur, it frequently changed K to C, and subtlety was required in handling some of the Kraft that entered the paper market.

Strawboard.

A board made from straw; of great general utility (not to be confused with the Board of Trade); imported from the Continent; mainly Holland. Firm, clean, and of golden hue before the war; its price was as the price of dross; Laek of tonnage compelled the production of substitutes; gone was the golden hue, but dross was at the price of ivory boards.

Common Brown.

Wrapping paper of the lowest category; color uncertain; quality, common; price, largely a matter of conscience. It may be animal, vegetable or mineral, and is not to be recommended as a tobacco substitute. Although common, it became scarce during the Great War, and was frequently camouflaged as English strawboard, "common rope," etc., a process which enhanced its price but not its reputation.

Greaseproof.

Genuine—a paper capable of containing butter (when obtainable) and enabling the butter-retailer (pre-war) to make a slight profit by weighing the wrapper, even on margarine. In 1917-18 a dead loss was made except in the case of "pate de fois gras" (no coupon required.)

Minimum Substance.

The thinnest sheet produced for sale in any grade of paper. A peculiar effect was produced by war conditions, while shortage of materials and need for the most stringent economy prevailed; some mills increased their minimum substances. Buyers, however, "carried on" with the remark that it seemed "a bit thick."

Regulations.

Four pages of printed matter, difficult to comprehend and impossible to observe. Usually revised before anyone gets a thorough grip of them.

Licence to Import.

Official testimony to the damnable efficiency of the U-boats.

Reduction of Licence.

Testimony to the efficiency of a Government department.

"Free" Paper.

Paper without obligations, moral or otherwise; travels about "on the loose" until it gets known to the police, often through consorting with aliens. It is always going up in price until it reaches the London limit; then someone has to use or repulp it.

Tonnage.

Pre-war, the weight in tons of paper carried in a ship. After two years of control its meaning might be construed as the weight in ounces, grams, or dwts. of paper, per person, per period, per-haps, that one might expect to receive, provided that the Government did not require it, the mill had materials, men

to work it and clerks to calculate the rations; also if Swedish, that the importer had sufficient patience, subtlety, and cash in hand, to conform with the regulations. Anyone attempting to square expectations with results, and dividing the remainder pro rata among his customers, is safe for a very fat head and a doubtful volume of thanks. If the war lasts another two years, tonnage will probably be superseded by parcel postage.

STATISTICAL SUMMARY OF THE PAPER INDUSTRY FOR THE MONTH OF MARCH, 1919.

Comparing the stocks on hand at the end of March with the average production for the month it will be seen, according to Federal Trade Commission reports, that:

Newsprint mill stocks equal slightly more than 7 days' output.

Book paper mill stocks equal about 13 days' output.

Paperboard mill stocks equal slightly more than 11 days' output.

Wrapping paper mill stocks equal slightly more than 38 days' output.

Bag paper mill stocks equal slightly more than 12 days' output.

Fine paper mill stocks equal slightly more than 41 days' output.

Tissue paper mill stocks equal about 20 days' output.

Hanging paper mill stocks equal slightly less than 10 days output.

Felts and building paper mill stocks equal slightly more than 14 days output.

Miscellaneous paper mill stocks equal slightly more than 23 days output.

Stocks of all grades were greater at the end of March than at the beginning of the month. The total stocks of all grades in the hands of manufacturers at the end of March amounted to 271,865 tons. Adding to the stocks of the mills, the newsprint and book paper stocks of jobbers, printers and publishers and the mill stocks at terminal and delivery points on March 31, gives a grand total of 563,246 tons in stock of all grades reported to the Federal Trade Commission.

The principal reasons for lost time were lack of orders and repairs. "Other reasons" include lack of labor, lack of material, lack of power, etc. One mill operating two machines reported 794 hours' lost time due to lack of coal.

PRICE BROS. PROFITS.

Total profits of Price Bros. & Co., derived from sales of lumber as well as pulp and paper, amounted to \$1,493,691 for the year ending February 28, as compared with \$1,374,752 for the previous twelve months. A number of important improvements have been made.

In his report to the shareholders the president, Sir William Price, points out that the lumber operations of the company during the year had been very satisfactory, largely owing to the extra demand from the United States market. The pulp and paper branches had continued to suffer from the increase in the cost of labor and all raw materials and supplies; but on the other hand, transportation difficulties previously experienced had been considerably eliminated.

LAURENTIDE BUSY.

In an interview this week in Montreal George H. Chahoon, president and general manager of Laurentide, stated that the mills at Grand Mere were running at full capacity in all departments. He declared that everything was in fine shape and the company was never busier in its existence, looking forward to a good season.

A NEW BRITISH PAPER MILL.

Albert E. Reed and Co., Ltd., have bought a large site on the borders of Aylesford, and intend to build a big paper mill. The site, which is in Newhythe parish, lies close to the river Medway, with the advantages of its tidal waterway, and is bounded on one side by the North Kent Railway. A stream of fresh water runs through the grounds. Messrs. Reed contemplate putting up their new mill as soon as the condition of the labor market and facilities in the building trade become more settled. It is part of their plan to erect dwellings within a convenient distance for their employees.

This groundwood mill is at Bishop's Falls, Nfld.

TIME LOST AND PAPER MADE IN U. S. MILLS.

Reports to the Federal Trade Commission from 56 mills operating 158 machines running full or partial time on print paper showed loss of time during the month of March due to: Lack of orders, 753 hours; repairs, 1,373 hours; other reasons, 1,232 hours. One mill operating two machines reported 970 hours lost on account of lack of material. The total time the machines of 56 mills were idle was approximately double that of the preceding period of corresponding length.

The total production of newsprint paper for the first three months of 1919 was 330,060 tons (of which 322,333 were shipped) compared with the production of 293,035 tons during the corresponding period last year. Total newsprint produced in March was 116,856 tons, including 106,002 tons of standard news. The gain in production for the first three months of 1919 compared with the first three months of 1918 amounts to 40,025 tons of total print, and 38,016 tons of standard news.

Imports and Exports.

The imports and exports of printing paper valued at not above 5 cents per pound (practically all newsprint), and of wood pulp for the month of February, 1919, as compared with the month of February, 1918, in net tons, were as follows:

	Feb. '19.	Feb. '18.
Imports of Newsprint (total), all		
From Canada	54,339	38,428
Exports of Newsprint (total)	14,946	5,075
Imports of Ground Wood Pulp (total)	8,667	7,861
Imports of Chemical Wood Pulp (total)	21,927	16,911
Unbleached sulphite	13,200	9,171
Bleached sulphite	644	1,729
Unbleached sulphate	7,767	6,011
Bleached sulphate	316	.....
Exports of Domestic Wood Pulp	3,092	2,434

There was a decrease of 5,346 tons in publishers' stocks during the month of March. Seventy publishing concerns held about 47 per cent of the total stocks at the end of the month. Jobbers' stocks decreased slightly.

New Type of Portable Conveyor

To secure economical operation and greater efficiency in handling material, labor must be supplanted by machines, and those selected which are best adapted for the particular work. Men with wheelbarrows are too costly to use in storing, moving or loading material, but, at the same time, the old style conveyors required a great deal of labor in shovelling the material up into the receiving hoppers.

A new type of portable conveyor, which cuts the labor of feeding one-half, is shown in the accompanying illustrations. The most distinctive feature of this machine, called the Scoop Conveyor, is the Scoop on the feeding end, which can be pushed or completely buried into the material to be conveyed. This makes it possible to simply scrape the material onto the carrying belt, instead of lifting it up by shovelfuls into the feeding hoppers of ordinary conveyors.

Another exclusive feature of this machine is the construction of the sides or skirt plates as they are called. These form a trough which enables a 12-inch wide belt to equal in carrying capacity a 20 inch ordinary troughed belt. This is readily understood when one remembers that on a troughed belt, the material is carried in the centre or trough, that on the sides falling into the trough or rolling back, whereas, the side plates on the Scoop Conveyor hold the material together, giving the whole width of the belt carrying effectiveness. It is due to the skirt plates, also, that a 24 ft. long Scoop Conveyor will convey material as high as a 30 ft. troughed belt. The resultant saving in belt expense is considerable, as two new 12 inch x 24 ft. Scoop Conveyor belts can be purchased for the price of one 20 inch x 30 ft. troughed conveyor belt.

While the Scoop Conveyor has been on the market only a short time, the manufacturers state that there are now over 1,000 in use, and that they are receiving over 50 per cent repeat orders. This would seem to indicate that the machines are giving good satisfaction to their owners.

The money savings resulting from the use of a Scoop Conveyor are due, first, to the saving in labor, second, to the speed at which material is conveyed.



Fig. 1.—Unloading from coal car to storage pile with a Scoop Conveyor.

Capacity and Uses.

The carrying capacity of the Scoop Conveyor, based on handling coal, is one ton per minute, provided a sufficient amount of coal is maintained at the receiving end of the machine. If the storage pile is of suf-

ficient height, one man can easily feed one ton in one and a half minutes, or if the pile is low, he may require from two to four minutes. Where speed is required two men may be provided for feeding. In unloading hopper bottom cars the machine and one man can remove one ton per minute.



Fig. 2.—Using three Scoop Conveyors to unload from hopper bottom cars to large storage pile.

Large size coal, coke, crushed stone, etc., fed by one man require from three to six minutes for one ton or half that time with two men.

The Scoop Conveyor is used principally for storing, reclaiming and loading bulk material and light articles. There are an unlimited number of uses for the machine, in addition, such as elevating material to tanks or platforms in chemical and industrial works, feeding from cars and delivering into fired conveyors or stoker magazines at power plants, etc. Almost any kind of material can be handled, such as coal of all kinds, ashes, sand, crushed stone, sulphur chips, and lap pulp.

The Scoop Conveyor may be used singly, in tandem or in triplicate as may be required. The employment of sets of two or more allows for an increase in height of the storage pile or conveying distance. Fig. 2 illustrates three machines unloading coal from hopper cars up a long steep incline.

The Scoop Conveyor is made in three different sizes 13'8", 19'8" and 24'. The width of the conveying belt on any of these sizes may be either 12" or 16" wide as desired. Size 13'8" elevates to a total height from the ground of 5'9", the 19'8" size may be adjusted for any height from 6 feet to 9 feet, and the 24' size may be adjusted for any height from 9 feet to 12 feet. The machines are furnished with either electric motor or gasoline engine, or where customer prefers to furnish and install motor himself, motor support and drive from motor shaft are provided.

The electric motor or gasoline engine, mounted under the frame, transmits power to the conveyor by means of a chain and sprocket connection to a shaft extending beneath the conveyor. From a sprocket on the other end of this shaft the power in turn is transmitted to the driving sprocket, located at the upper end of the conveyor.

The carrying belt is a high grade of heavy duck and rubber conveying belt and duck cross strips. These transverse cleats are provided to prevent the material from slipping back down the incline.

For catalog and other information address the manufacturers, The Portable Machine Co., Inc., Passaic, N.J.

Ottawa Notes

Little if any trouble with paper mill labor is expected to materialize in the Ottawa district on or about May 1st, when strikes and new demands of labor are usually presented. The reason for this as given by statements in the press from Albany some time ago was that the new demands as then announced would not be formally presented until May.

The general view of paper makers at Ottawa up to early this week seemed to be that nothing would be done in the situation until sometime between May 1st or 2nd, up to May 11th, if organized labor adhered to their announced policy. The award of the National War Labor in the United States, decreed that the schedules set for the workers would extend to the duration of the war and six months thereafter. Labor at its convention at Albany claimed that the war virtually ended with the signing of the armistice on November 11th, and thus that the "six months thereafter" would mean May 11th, as the date for new or increased demands being presented. Though no official announcement had been made there is a possibility that the prospect of paper mill labor presenting new demands on May 11th will be taken up or referred to when the newsprint inquiry resumes in session on May 8th.

Announcement that the Canadian Newsprint Inquiry had been adjourned from May 5th to 8th, together with the uncertain attitude of labor as to the pulp and paper mills after May 11th, featured the Canadian newsprint situation as it existed at Ottawa up to Tuesday this week. The reason for the postponement of the newsprint probe was due according to official announcement by the Paper Controller from a "request from both sides."

The reason for this as given was on account of it being found that there was not sufficient hotel accommodation at Ottawa, owing to conventions being held to accommodate those whose presence at the probe would be necessary.

High water conditions prevailing this spring in the Ottawa river has for the past week or ten days led to a decline in the development of power for paper manufacturing purposes at the John R. Booth and E. B. Eddy plants. The decline is not as yet serious and up to the beginning of the week it was not thought by paper manufacturers that any great inconvenience would be experienced. The chief hardship so far has been in the operation of the grinders at the E. B. Eddy Company at Hull, Que.

According to paper manufacturers the height of the river below Chaudiere falls this spring is from three to four feet higher than during corresponding seasons in other years. The increased height is attributed largely to spring rains and the quick going away of the snows in the Ottawa Valley area drained by the Ottawa River. The "northern waters" usually come down around May 24th to June 1st.

There is a twenty foot head at the Chaudiere at present, but the Booth mill does not anticipate any trouble.

Workers in the E. B. Eddy Company have been placed on the eight hour shift principle throughout the whole plant. The paper makers some time ago made the eight hour day a part of their demands, and following on this other organized labor presented a similar request, which was acceded to on the part of the company.

Lieut. Fred James, formerly of the Citizen Editorial

Staff and later official war correspondent with the Canadian forces recently returned to Ottawa.

Sergt. R. H. Pringle, son of Mr. Robert A. Pringle, K.C., the Paper Controller, arrived back in Ottawa last week after being overseas with the first Canadian Tank Battalion.

Gunner Hugh McLean, son of Angus McLean of the Bathurst Lumber Co., Bathurst, N.B., who was with the 12th Canadian Siege Battery, and sailed for England in December, 1917, is expected home in a few days. Gunner McLean was with the Canadians in the fighting in France and went through the severe engagements at Cambrai. The battery had just reached Mons when the armistice was signed.

Messrs. S. Cassett and O. Cassett, formerly with the Spanish River Pulp & Paper Company, Saulte St. Marie, have taken positions in the paper mill at Iroquois Falls.

T. A. Weldon, vice-president of the Provincial Paper Mills Co., who with his wife and daughter, has been spending the past winter in Toronto, has returned to his home in Thorold for the summer months.

A new industry which will supply both local and export markets is now being completed on Industrial Island, Vancouver, B.C., and will be known as the Pacific Roofing Co., Ltd. The chief product of the plant will be asphalt ready roofing, in rolls, the asphalt compounds for which are secured in British Columbia, the company thus using a local product in the manufacture of its output. The company will have representatives in Australia, New Zealand, and the Orient.

SOLDIER SENDS SAMPLES OF PAPER CLOTHES.

What may be the most complete set of samples in Canada of the paper clothing made in Germany is now in the office of the Canadian Pulp and Paper Association. They were sent by Capt. John H. McLachlin of Arnprior, Ont., and were bought in Bonn, Germany. The collection consists of underwear, braces, corsets, aprons, towels, and material apparently intended for furniture covering, but which might possibly be used for dress goods. At first glance the garments seem to be made of very coarse linen, but a close examination shows that they are composed entirely of paper that has been cut into narrow ribbons, twisted into threads and then woven in the ordinary way. It is said that the paper is heavily sized so that the garments will stand washing once or twice, but this seems doubtful.

The undyed goods are grey in color, and the garments are neatly made. The colors of the dyed fabrics are bright and attractive, and the patterns are tasteful enough.

Judging from the tickets attached to some of the pieces the price of the articles is very high. A pair of braces is marked at what is equal to about 85c. Canadian money and a paper apron, that would cost here if made of cotton about 60c. to 75c., is valued at \$3 in Germany.

While these fabrics testify to the ingenuity of the German they are also an evidence of the great straits the country was reduced to for textiles.

ST. MAURICE PAPER'S PROFITS.

The operating profit of the St. Maurice Paper Co., Limited, for 1918 amounted to \$1,468,488, as compared with \$1,060,853 in 1917. The surplus was \$562,300 and total assets \$9,727,425, an increase of nearly \$1,000,000.



UNITED STATES NOTES

The American Publishers' Association, which held its thirty-third annual meeting last week in the Waldorf-Astoria Hotel, New York City, closed the sessions Friday afternoon with the re-election of the following officers for the coming year: T. P. Glass of the Birmingham News, president; George McAneny, of the New York Times, vice-president; John Stewart Bryan of the Richmond News-Leader, secretary, and Edward P. Call of the New York Journal of Commerce, treasurer. The concluding session of the meeting was given over to a discussion of the newsprint situation and the report of the association's paper committee on the Publisher's Paper Company, a corporation organized to bring additional paper into the American market during the shortage, which became serious in 1917.

The tour worker's bill, after having come closer to passage this year than at any time since it became a piece of legislation, was finally killed last week in the Massachusetts Senate. Paper manufacturers of Holyoke are elated over the defeat of the measure. Although the proposed legislation would have proved superficial insofar as the large manufacturer is concerned, eighty-three per cent. of whom have voluntarily adopted the three tour systems, it would, had it been enacted, have worked great hardships on the small manufacturer, perhaps driving many of them out of business.

A conference will be held in the near future by committees representing the Philadelphia Stationers' Association and the Paper Trade association for the purpose of discussing and adopting some plan of distribution along the line of what is considered a logical and legitimate apportionment of business. One of the plans formulated proposes to have consumers come direct to the paper warehouses, make selections and place orders which will be delivered and billed through the stationary firms of which the buyers are regular customers. The stationers have felt in need of some such plan so as to end the abuse which had grown up due to the direct sale of paper to the consumers, ordinarily patrons of the stationers, at a price with which the latter cannot compete.

Ogden Mills, Philip T. Dodge, William D. Russell, Ogden Reid, Albert Wiggin, and Herbert A. Wilder were elected directors of the International Paper Company at the annual meeting of the board of directors last week.

James White, president of the James White Paper Company, the well-known Chicago jobbing house, died April 18, following an operation to correct a condition caused by jaundice. Mr. White, a very prominent member of the Chicago paper trade, was a leader in organization work, taking an active part in the councils of the Western Paper Merchants' Association and the National Paper Trade Association. He was born in Bainbridge, Ireland, and emigrated to Chicago in 1875, residing there ever since.

The entire fourth floor of the Irving Trust Company's Market and Fulton Branch Building in New York City has been leased for a long term of years to the Chemical Foundation, Inc. The Chemical Foundation is a \$600,000 company organized at the sugges-

tion of the Alien Property Custodian by members of the American Dyes Institute, the American Manufacturing Chemists' Association, and others engaged in the various branches of the chemical industries. The foundation will purchase from the Alien Property Custodian and hold for the chemical industries and for the country at large the German-owned United States chemical and allied patents as well as enemy trademarks, etc. These will be licensed to American manufacturers.

The annual convention of the National Federation of Paper Box Manufacturers will be held this year at the Hotel Traymore, Atlantic City, May 7 and 8. A discussion of prices during the after war reconstruction period and the bearing on them of raw materials and of labor will be participated in by speakers from all parts of the country, and the results of the educational uniform, cost accounting campaign, which the Federation has been conducting during the past year, will be disclosed.

Director General of Railroads Hines has petitioned the Interstate Commission for a reopening of the Michigan percentage cases in which the commission held that rates between Eastern trunk line territory and certain Michigan communities were not unreasonable in themselves, but were constructed to give undue preference to cities in Ohio and Indiana and to Detroit.

When the National Association of Manufacturers opens its twenty-fourth annual convention in New York May 19, many important problems will be considered, among them, the Government ownership of railroads, Government supervision and stabilization of trade prices, Federal revenue and tax legislation, employment relations, employer's duty to provide jobs for soldiers, revision of patent laws, social and industrial unrest, industrial legislative outlook, and vocational training.

The United States has never exported much paper to Japan, but this export has increased during the war about 580 per cent. Five per cent of the Japanese printing paper comes from the United States. From Japan the United States imports tissue paper and etching paper.—U. S. Tariff Commission.

BOOK STATISTICS.

A chart of all the books published in Britain and the United States in 1918, says the Christian Science Monitor, shows that 922 books of history head the list, while 788 books of fiction in second place, and with books of sociology and economics following closely in third place to the number of 721.

The war, of course, is responsible for the preponderance of historical works; but the disparity of the figures as between fiction and non-fiction is rather surprising. Yet it is characteristic of book publishing from year to year, contrary to the general impression that fiction far outnumbers works of more serious import.

Less than nine per cent of new publications last year were fiction. But it is safe to say that the number of copies sold in each class will not maintain that average, as authors of serious books know to their sorrow, and writers of best sellers to the contrary.

Technical Section

FIRST STUDENT MEMBER.

The honor of being the first student member of the Technical Section goes to Mr. Henry H. Bleakney, 108 Broadway avenue, Ottawa, who is now at Queen's University, in his first year Science. He is endeavoring to secure a position in a paper mill for the summer months in which the secretary is endeavoring to give him every possible assistance.

REVIEW OF RECENT LITERATURE.

A-1. Eucalyptus as a source of paper. (*L'eucalyptus bois de papeterie. Sa culture en France*). J. Michel de Portemont. *Le Papier*, 22, No. 1 (Jan., 1919), p. 17.—Eucalyptus yields about 42 per cent of cellulose fibres. The fibres are rather short (about 0.9 mm.), but extremely fine (about 16μ in diameter), and consequently they felt very well, and they are also very strong. The tree possesses the advantage of a remarkably rapid growth, a growth of 20 years, yielding about 1,000 steres per hectare, while it is but very rarely that 500 steres are obtained from other species of 75 years' growth. The author suggests establishing eucalyptus forests in the swampy regions of Southern France, thereby creating an important source of wealth for the country, and at the same time changing an unhealthy swamp into a healthy and habitable region.—A. P.—C.

A-3. Australian papermaking woods and fibres. *Paper* 24 (1919), No. 2, p. 11-12 and 40. Research being conducted for development of independent industry in Australia.—E. K. M.

A-3. Waste pulp from New Zealand hemp. *Anon. Bulletin Imp. Inst.* 16, 134-8 (1918).—A large amount of waste pulp is obtained from the leaves of the New Zealand hemp plant (*Phormium tenax*). Two samples of this pulp were taken; one was sun-dried before placing in sacks, the second was rotted for 2 months, sun-dried, then placed in sacks. These samples were examined as to their value for the manufacture of paper pulp. Analysis gave: (sun-dried moisture 8.3 per cent, cellulose in dry pulp 31.8 per cent; (rotted sample), moisture 8.9 per cent, cellulose 37.4 per cent. In both cases the cellulose was of poor quality, and of no value for paper making. The heating value of the sun-dried pulp is about 45 per cent that of good steam coal.—Chem. Abs.

A-14. The Webb paper tester. By J. D. Mahobson. *Paper* 23 (1919), No. 26, p. 16-18 and 24 (1919), No. 1, p. 13-14.—A new instrument for testing corrugated fiber boards. The component parts of the board may be tested separately. The Webb tester is roughly the size of a desk telephone. Pressure is applied to the plunger by means of a helical steel spring surrounding the upper part or "barrel of the plunger. This spring is compressed by turning a hand-wheel, the force being transmitted by suitable gearing. A dial, actuated by a rack and pinion, measures the deflection of the spring, and is calibrated to read in pounds per square inch. In addition to the puncture test, the Webb machine may be used for tensile, elongation, and compression tests. The tensile test, especially when "across the grain," is an important index of the value of a fiber box as a shipping container. The pocket-size model makes it possible to test corrugated boxes under conditions which

are impossible at present. Besides corrugated products, the Webb machine can be used for testing many other flat substances, such as paper, cardboard, "solid fiber" boards, gummed tape, fabrics, etc. (A criticism of this instrument by F. P. Cleveland, of B. F. Perkins & Son is found in *Paper* 24, No. 3, p. 21. He draws attention to some defects of plunger machines, and the advantages of diaphragm apparatus like the Mullen tester).—E. K. M.

A-14. Vegetable fibres used in papermaking (Testing).—Report of the Paper Testing Committee, American Technical Association. By Fred C. Clark, *Paper* 23 (1919), No. 25, p. 12-13. Method of preparing chloriodide of zinc, phloroglucinol and aniline sulphate. Classification and characteristics of the more common vegetable fibers in the textile and paper industries under following heads:

FIBER	Individual cells	Microscopical appearance	Color reaction with various reagents
	Length	breadth	

B-4. A new use for dead leaves. (*Utilisation des feuilles mortes de tous les arbres feuillus comme matière destinée à la fabrication d'un produit nouveau susceptible de diverses applications industrielles*). French patent 488,941, granted to Mrs. Karen Bramson, (nee Adeler) Seine, France. *Le Papier*, 22, No. 1, Jan., 1919, p. 28.—The process consists essentially in subjecting dead leaves to a very high pressure, thereby making blocks or plates. They may be first washed, bleached with chlorine, treated with an agglutinant, and colored; but any or all of these operations may be omitted if desired. The finished "plastic" can be easily worked so as to make articles such as are made from casein, celluloid, and similar bodies. It is a good heat insulator.—A. P.—C.

B-9. Forest products statistics. *Paper* 23 (1919), No. 26, p. 11-14 and 24 (1919), No. 1, p. 15-17 and 38.—A classified list of U. S. Government information adopted from compilation, by the U. S. Central Bureau of Planning and Statistics, Statistics Clearing House.—E. K. M.

C-7. The Whitham barking machine. By George S. Whitham, Jr. *Paper* 24 (1919), No. 1, p. 12. U. S. patent No. 1,277,808.—The machine is described as one for the purpose of removing the bark and color from logs of pulp wood without removing any of the solid wood or splintering the fiber of the outer surface. This is accomplished by bruising and thus loosening to some extent the layer of bark, without substantial destruction of its continuity, and then peeling it off by means of a water jet of high velocity and directed at a suitable angle. Illustration.—E. K. M.

D-4. Report of Groundwood Committee. T. A. P. I. (*Grinding hardwood*). J. O. Mason, *Paper* 23 (1919), No. 24, p. 18-19.—Statement read on the grinding of hardwoods at the Laurentide Co. Total hours run, 54; cords ground per hour, 3.284; lb. per 24 hours, 78,736. Fibers very fine, but uniform. For summer conditions 10 to 15 per cent might be beneficial to work as a whole.—E. K. M.

D-0. Mechanical pulpwood (*Les pates mecaniques de bois*). P. Raehon. *Le Papier* 22, 1, Jan., 1919, pp. 1-15.—This is the last of a series of 3 articles. In it the author describes the Voith magazine grinder and

shows its advantages. He takes up screening and refining, giving detailed descriptions of both flat and centrifugal screens and of their action. He describes also the principle and the action of the deckers, save-all, and wet-machine, including the wet-machine with several vats. After enumerating the uses and properties of white groundwood, he concludes with a description of the process of making "brown" pulp, which consists essentially in steaming the wood before grinding.—A. P. C.

E-2. Fermenting sulfite liquors. R. H. McKee. Brit. 120,520, May 15, 1918.—To produce alcohol from sulfite liquors containing fermentable sugars they are treated with yeast in the presence of excess O. The amount of free SO₂ in the liquor is preferably reduced to 0.35 grams per liter by boiling, blowing air through the solution while heated, or other methods. The liquor is then brought to a temperature of 27-8° and yeast is added. Air is blown through the liquor while fermentation is proceeding. The liquid is then distilled to separate the alcohol, alkali being added to fix the SO₂. The air used in the process is washed in unfermented liquor to recover alcohol carried off by it.

E-5. Pulp from waste wood. (Fabrication de la Cellulose: Utilisation des déchets de bois). C. Flaumet. Le Papier, 22, No. 1, (Jan., 1919), p. 23.—The following process, which is applicable to such waste as edgings and saw-dust, is due to Messrs. Breech and Tylorowski, and is being used by the Rosenblum Company. The wood is introduced into a vessel, and a "solution" of resin solvents in water is added. The amount of solvent should be 1½-2 per cent of the wood, more or less, and about 1 per cent of ammonia is also added. The solvents should be of such a nature as to emulsify with water. The wood is cooked for 4-5 hours at a temperature of 110 C. When all the resin has been extracted the vessel is opened at the bottom, when under a pressure of about one atmosphere, thereby ejecting the liquid and vapor, but leaving the wood. By adding lime before extracting the resins, a lime soap is formed, the recovery of the ammonia is greatly facilitated, and the treated wood is lighter in color. The wood is then steamed, which obviates the necessity of chipping. It is then made into pulp by the sulphite process.—A. P. C.

K-6. Obtaining pulp, etc., from sea tang. V. Frydensberg. Brit. 120,761, Nov. 19, 1917.—In preparing sea tang, particularly *Zostera marina*, for paper pulp or for strengthening plaster, stucco, and the like, the whole mass, which may be bleached with Cl₂ chloride of lime, or the like, is dried in the air or artificially and then comminuted by ordinary crushing, rubbing, or carding processes to the required degree of fineness.—Chem. Abs.

K-23. Photographic paper technology. Paper 23 (1919), No. 17, p. 11-13.—Clarity and purity of water is first in order as is also the cleanliness and refining of the pulp. All parts of the apparatus that come in contact with the pulp must be so constructed that their presence or utilization will not be a source of contamination by iron. Some photographic papers receive the exposure directly on their surface, but the larger proportion record the image on an emulsified surface superimposed on a baryta coating. The intermediate gelatin, glue, and baryta whole is subsequently more or less thoroughly calendered. The baryta surface receives emulsions of chloride, bromide or iodide of silver. The sizing of the paper

should be of extraordinary intensity by means of a size containing a great deal of free rosin, which is further re-enforced by gelatin, casein, wax or starch. The papers are usually heavy, varying from 100 to 200 grams per square meter, and composed of selected raw materials: sometimes pure rags, sometimes a combination of rags and chemical pulp. It must be clean, pure and free from all particles of iron or of bronze. Alum (double sulphate of aluminum and potassium) should be employed for sizing in preference to sulphate of alumina, which only too often contains a percentage of iron.—E. K. M.

K-23. The absorption of water by vulcanized fiber and erinoid on exposure to moist air and the consequent change of electrical resistance. R. G. Allen. Sci. Proc. Roy. Dublin Soc. 15, 405-14 (1918).—Plates of vulcanized fibre, red and blue erinoid, 5.5 x 5.95 x 0.5 cm. were exposed to air of saturated humidity for 400 hours, when the fiber had absorbed 3.42 grams, the red erinoid 1.43 grams, and the blue erinoid 1.26 grams. Comparable results were obtained with samples in the form of tubes. Tables are given showing the electric resistance of the samples, and the effect of increased absorption of water at various temperatures.—Chem. Abs.

K-0. Rotogravure process of illustrating. Paper 24 (1919), No. 1, p. 11-12.—No screen is used in the half-tone process and plate reproduces best on poor paper.—E. K. M.

L-7. Paper textiles. Lillian B. Storms. Iowa State College. J. Home Econ. 10, 451-6 (1918).—A summary of the development of paper textiles. A bibliography is appended.—Chem. Abs.

L-0. Stencil-sheet. J. A. Amblor. U. S. 1,288,792, Dec. 24.—A stencil-sheet is prepared by passing an open-texture porous paper through a solution of gelatin and CaCl₂, and then through a solution of glycerol. The sheet is tough and pliable.—Chem. Abs.

L-0. Paper pipes. (Tuyaux pour tous usages et embois quelconques obtenus par enroulement ca collage continus de papier on carton.)—French patent 489,115 granted to P. M. Dalery, France. Le Papier, 22, 1, Jan., 1919, p. 29.—Pipes which may be put to all uses may be obtained by continuous winding of paper on a suitable machine. To strengthen the pipe, wire gauze, or thin sheets of leather or textile fabrics are wound with the paper. In order to render them waterproof and to prevent decay, they are treated both inside and out with a waterproofing substance, and may after be given a metal covering.—A. P. C.

L-0. Paper soles. (Semelles en papier). Le Papier, 21, No. 11, (Nov., 1919), p. 190.—About 30 sheets of paper are first soaked in turpentine, and then treated with a glue made up of turpentine, Spanish white, resin lac, linseed oil and litharge. The composition is then submitted to high pressure. After scraping and polishing it will furnish soles as waterproof, and as durable as the best of leathers.—A. P. C.

R-0. How to size up men at sight. By Katherine M. H. Blackford. Paper 23 (1919), No. 24, p. 11-16.—A lecture before Technical Association of Pulp and Paper Industry on character analysis for business purposes. Individuals are classified according to the following characteristics: color, convex and concave types (significance of), size, structure, self-expression, the fat man, texture, proportion, feminine and masculine characteristic, expression, condition and natural aptitudes and education.—E. K.

PULP AND PAPER NEWS

Mr. Wainwright, of the Canadian Export Paper Company, Montreal, was in Toronto during the past week on business and called upon a number of members in the trade.

Sergt.-Major H. H. Dunn, salesman for the Victoria Paper and Twine Co., Limited, Toronto, returned home recently after being at the front for four years. Sergt. Dunn was wounded twice and also affected by gas. He was warmly welcomed back by his old associates into the Victoria fold.

The coated paper plant of the Provincial Paper Mills Co. at Georgetown, Ont., which was shut down for several days, resumed operations on Monday of this week. The cylinder head of the boiler, weighing four tons, was sent by express to Galt where it was found necessary to make new borings and have the valves restored by Goldie & Metulloeh, who worked night and day on the job and sent the cylinder head back to the mill by express.

There has been quite an influx of new cars among the paper men in Toronto and Thorold. I. H. Weldon, of the Provincial Paper Mills Co., is driving a new seven passenger McLaughlin; S. F. Dumeau, of the same company, a new Peerless; George Carruthers, of the Interlake Tissue Mills a Studebaker, while F. M. H. Cushing, of the Montrose mill, Thorold, motored to Toronto last week, making his debut as a driver of a Gray-Dort.

The Hampel Paper Box Co., of Brantford, Ont., have purchased the old Queen's hotel building in Woodstock, Ont., and repairs are being made to the property. When completed a new paper box factory will be in operation in Woodstock which will increase the opportunity for employment.

The pulp mill of the Bathurst Lumber Co., Bathurst, N.B., which has been down for some time started up again this week. Fourteen additional dryers have been installed on the sulphite machine, which will increase the tonnage by twenty per cent. The company have also put in a new fuel economizer, so that the plant is in good shape.

Colin La Fortune, of Port Dover, Ont., who is the oldest lumberman in Canada, celebrated his hundred and first birthday last week. He is still quite vigorous and busies himself with many little tasks each day. For sixty-five years he was engaged in the business of felling and driving timber and is the last of five brothers, four of whom died at the ages of 106, 103, 98 and 94. Mr. La Fortune resides with his daughter, Mrs. F. L. Nicolls, Port Dover, and is fond of gardening and outdoor work, such as raising poultry.

A new paper plant is being started at St. Boniface, which is a suburb of Winnipeg. J. S. Hughes is the promoter and manager of the concern, which has acquired the old Arctic Lee Company's building on which several thousand dollars has been spent in alterations and additions. The machinery is now being installed at a cost of over \$50,000, and the mill will employ about twenty-five hands at the outset. (Advices do not state the character of the plant or kind of product.)

The Victoria Paper and Twine Co., Limited, of Toronto have been appointed selling agents for the Dextrine Co., of Thorold, Ont., manufacturers of white and dark British gum and white and yellow dextrine and pastes as well as dry gum in powder form and Grip-tite light and heavy gum in liquid form. The company report a large sale for these products and have received many repeat orders. Since the Dextrine Co. at Thorold began making these products in Canada, they have met with a large measure of success, being the pioneers in this line.

J. J. Carriek, ex-M.P. of Port Arthur, Ont., who has been away from home for several weeks, was in Toronto recently on his return and reports that Port Arthur is booming. Mr. Carriek expects to go ahead with his large pulp and paper mill in that city in the near future.

All the past year there has been a steady shipment of pulp and paper from British Columbia mills from the Coast to Transpacific ports and cargoes are expected to increase as time passes. During the past week the Australian motorship Challamba loaded paper at Powell River and the steamer Maedon at Oceau Falls for shipment to Australia.

It is understood that the work on the new pulp and paper mill of the Spruce Falls Pulp and Paper Co., which will be erected at Kapuskasing, Ont., will start shortly. A tour was recently made by the officials of the company and its engineering staff, accompanied by S. A. Munday of Bradford, Pa., president, and Elihu Stewart, of Toronto, vice-president of the company. Both American and Canadian capital is interested in the venture and it is expected that contracts for construction will be awarded in the near future.

The Nominique Pulp & Paper Co., Ltd., have been granted supplementary letters patent to change their name to Eugene Patenaude, Limitee.

A charter has been granted to the British-Canadian Publishing Co., with headquarters in Toronto and a capital stock of \$40,000 to manufacture, buy, sell and deal in goods and wares merchandise of various kinds.

A charter has been granted to the Mageau Lumber Co., Limited, with head offices at Field, Ont., in the district of Nipissing and a capital stock of \$250,000 to carry on the business of lumbering and pulp manufacturers in all its branches. Among the incorporators of the new concern are Zotique Mageau, M.L.A., of Sturgeon Falls, Ont.; Joseph U. Lamarre, D. Thibert and Hector O. Tremblay, of Field township.

Josiah Hallett, one of the best known and most highly respected residents of York County, who died at his home in Millville, carried on in the winter season extensive lumbering operations on the Nashwaak and tributaries. For many years he operated for the late Alex. Gibson, and since Gibson's death has been getting out logs for the Nashwaak Pulp and Paper Company. Last winter he got out two million feet of lumber for this company. He had cut as high as six million feet in other winters, but did not operate as extensively last winter.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, April 28.—There is not much change in the pulp and paper situation except that trade grows better all the while and orders are coming in more freely. The outlook is improving each week, and while some mills are very busy others could stand more business. The pulp market is expected to improve in the near future and some plants, which were closed down have resumed operations. There is little demand at present for pulpwood and considering its high cost, and the quiet condition for the finished product, buying is limited. More inquiries are coming in all the while from foreign countries for Canadian paper, and it is hoped that, with the opening of navigation, there will soon be some improvement in the situation although ocean rates continue to ascend and the government has as yet released only thirty per cent of space for commercial shipments. It may take a few months to get into the swing but the export business is bound to come and when it does Canada can look for the greatest year ever in pulp and paper production. Pulp and paper securities have been very active on the stock market, and this is a very good trend of affairs. There is an excellent demand for newsprint and all mills are busy.

Box board plants report an increase in number of orders and periodical publishers are taking larger quantities of book paper owing to advertising. Special editions of trade and technical papers show a large gain in advertising and jobbers report that trade is coming stronger and those firms, which evinced a disposition to hang back, are now buying more freely.

The ground wood pulp market is rather quiet and one leading manufacturer stated this week that, considering the high price he had to pay for the wood delivered at his mill and the figure which he could obtain for his finished product it allowed little or no profit and that it was a difficult proposition to make ends meet. All mills have plenty of water, owing to heavy spring rains, to operate their grinders and the absence of export business places the outlet at a minimum. Some plants which have made for sale to outside concerns, have so curtailed production that they

manufacture only what they can use themselves. With the mills on the other side of the line getting busier, it is expected that buying will pick up in the near future.

With respect to the agitation from over the border to have the embargo on raw pulp wood cut on Crown lands removed so that large shipments can be made to the United States, it is recalled that the Ross Government in Ontario was the first to place such restrictions on unmanufactured wood. Up to that time the forests of the north were being rapidly depleted by Michigan and Wisconsin pulp and lumber concerns. The daily papers severely criticized the Department of Lands, Forests and Mines for allowing this wholesale exploitation to go on and the criticism bore fruit. What has been the result? In Ontario alone there have been erected the Mattagami Pulp and Paper Co. plant, the Dryden plant, the Abitibi plant, the Fort Frances plant, the Spanish river plant, the Port Arthur plant, the Soo plant and others largely on this account. There are three large pulp wood limit concessions in the north upon which pulp mills each costing a million dollars will be built before many months or as soon as capital is released in sufficient quantities to permit of the erection of new undertakings. In all sales of pulp wood or timber limits the province, for many years, has inserted a proviso that the wood must be manufactured into lumber or pulp before its export from Ontario is sanctioned. Quebec followed suit in this excellent piece of legislation and later came New Brunswick. The outcome is that Canada is becoming the greatest pulp and paper producing country of the world and intends to retain that position. In Quebec, the advancement of the industry has been more wonderful than it has in Ontario, and no industry in the Dominion has been making greater strides than the pulp and paper in spite of the fact that federal regulation and interference with prices has greatly hampered expansion since the outbreak of the war. One company in Ontario is now offering 680,000 acres of pulp wood for sale and were the embargo not in force all the product of these pulp lands would be shipped across the border and the province would have in a few

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It is expected that the water will be let out of the old Welland canal at the end of May and the plants at Thorold, Merriton and St. Catharines will all take advantage of the occasion to overhaul their equipment which they have not been in a position to do satisfactorily for the past two years owing to rush of orders. Envelope factories are busy, paper box plants are getting more active and specialty mills all report that orders are keeping up well.

Deliveries of paper are now good and all wholesalers who lost many orders last year due to the great rush are able to take care of the needs of their customers. Collections are reported to be good and things are moving along with an even steady swing. The predicted decrease in prices has not come and there is now little, if any talk heard of values being too high. What few price reductions have taken place have not been in the least encouraging. They have not resulted in increasing the business in those lines and have only stimulated the desire for still lower prices. Labor conditions are very favorable, but there is no sign of wages coming down and raw materials of all kinds keep up to a high figure. There are no artificialities about the paper business in the Dominion and, in the meantime, the watchwords are conservation and a policy of judicious expansion and sound selling.

NEW YORK MARKETS.

New York, April 26.—General conditions surrounding the paper market remain unchanged. If anything, business has been of larger volume during the past week, though trade activity continues to be of less than normal proportions, and consumers show equal cautiousness in their buying operations as they have been prone to do for some time. Nevertheless the situation is improving. Demand is gradually undergoing expansion and indications are that the market is well on the way to assume its normal position. Export business is steadily increasing, and domestic consumers apparently are being compelled by force of necessity to enlarge the volume of their orders although still purchasing only as their requirements develop.

Prices continue to be unsettled. For a time, quotations appeared to have become well stabilized, but since then conditions have arisen which have caused prices again to become irregular. Raw materials are sagging and this is creative of easiness in values on the finished product, and while there have been no drastic declines, mills in many instances have granted concessions to secure orders.

The newsprint situation is possibly the strongest end of the market at present. Manufacturers are shipping the great bulk of their production about as soon as it becomes available, and demand is of sufficient breadth to absorb practically all the supply available. Publishers are constantly coming into the market for additional amounts of paper, while demand from export sources is increasing. Prices are firm and mills are insistent for full quoted figures.

Book papers are moving in a consistent manner and at steady prices. Demand is good and reports from manufacturing centres indicate that it is expanding. Many mills which have been running on part time are now said to be operating at capacity and to be finding a ready market for all of their output. Quo-

tations are maintained and are tending upward.

The firmness and activity prevailing in the newsprint and book paper markets are in direct contrast to the situation in writing and wrapping papers. Demand for the latter descriptions is narrow, and mills as a unit are eagerly seeking business. Fine grades of writing are particularly quiet. There is relatively a fair movement of the cheaper qualities, but high grade stock is little sought, and manufacturers are having difficulty in disposing of stocks they have on hand which they have had in store for a considerable length of time. Wrappings are moving only in limited quantities; consumers in general confining their buying to amounts for which they have direct need.

Tissues also are comparatively quiet, and prices have eased off a bit. No. 1 white tissue is now selling at around \$1.10, while manila tissue is available at \$1.00.

Boards are fairly lively, and the market is in a steady position. Demand is of a spasmodic character, however, and mills running full one week find themselves with few orders to fill the following week. The movement has as yet failed to attain such proportions as to cause any further enhancement in values, and prices are stationary, ranging around a basis of \$40 per ton for chip board.

Ground Wood. The activity in the newsprint market is not reflected in any large demand for ground wood, and the market is in almost as dull a condition as has prevailed for several months. Purchases are of course being made in the open market, but consumers as a rule are absorbing merely minor tonnages of spot pulp, with the result that prices are just about being maintained at previous levels. No. 1 spruce ground wood is freely offered by eastern grinders at \$26 per ton at the pulp mill, and reports are heard of some supply being available at a dollar a ton less.

Chemical Pulp.—Considerable selling pressure on foreign pulps has again been in evidence this week, and the market has been in an unsettled state. The prices named in some quarters on Scandinavian pulp have been below the cost of importation, which would indicate that holders are anxious to liquidate such stocks as they have on the docks or in warehouses. For example, rumors have been heard of sales of Scandinavian kraft pulp at as low as 3.50 cents per pound delivered mills, while importers assert that latest quotations from the other side represent a cost of just a shade below 5.00 cents landed New York. Foreign unbleached sulphite has been offered on spot at as low as 4.00 cents a pound, while foreign bleached has sold at 8.25 cents ex-dock, the latter grade being relatively steady owing to the scarcity of spot holdings. Domestic pulps rule fairly firm, but are in poor demand. Unbleached sulphite of newsprint quality is offered at 3.25 to 3.50 cents at the pulp mill, domestic easy bleaching at 4.00 to 4.25 cents and kraft at 3.75 to 4.00 cents. Bleached sulphite prices range anywhere from 5.00 to 6.00 cents per pound, depending on the quality and amount involved.

Rags.—Very little activity of an import scope has been apparent in the rag market this week. Dealers have not exerted pressure on buyers, for the feeling is common in the trade that a broad market and strong prices will soon exist for rags. Traders base their belief in this regard on the exceptionally light accumulations of material in the market and at collection centres, and the difficulty collectors are having in locating normal supplies throughout the country.

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Prices therefore are well maintained despite the general lack of buying. No. 1 repacked whites are held at 5.25 to 5.50 cents f.o.b. New York, repacked thirds and blues at 3.00 cents and black cotton stockings at 2.75 cents. Roofing stock is in little call, yet it is doubtful whether any sizable tonnage could be purchased for less than 2.70 cents f.o.b. New York for No. 1 stock. New cuttings are moving only in small quantities to mills and prices are mainly nominal, with dealers asking 10.00 cents for No. 1 white shirt cuttings and 6.75 cents for No. 1 washables.

Paper Stock. Old papers have been in decidedly less demand during the past several days. Box board mills retired from the market early in the week, while other consumers have displayed little interest of a worth while character. Those firms which have orders for the low grades and which were buying freely from packers, were notified to stop shipping temporarily, with the result that demand fell off to a marked degree. Shavings continue to be neglected. Consumers show practically no desire whatsoever to buy either soft or hard shavings, and with stock piling up in dealers' hands, quotations are steadily sagging to lower levels. The only reason accounting for the pronounced dullness in this class of paper stock is the situation in wood pulp. Apparently paper mills are using the latter in their present operations in preference to old stock owing to the relative cheapness of pulp. No. 1 hard white shavings are available at 3.75 to 4.00 cents f.o.b. New York and soft whites for No. 1 grade at 2.75 to 2.85 cents. Books and magazines are offered in sizable volume by dealers at 1.25 to 1.35 cents New York, while

kraft paper of No. 1 quality is quoted at 1.90 to 2.00 cents and No. 1 print manilas at 90 cents to \$1.00 per hundred pounds. Folded newspapers are selling to mills at around 50 cents f.o.b. New York and No. 1 mixed paper at 45 cents.

Bagging and Rope. A firm undertone characterizes the situation in old manila rope. Demand from consuming sources is nothing out of the ordinary but available supplies appear to be light, and those firms having rope to sell are insistent on full quoted prices. Reports are heard of representatives of large New England consumers absorbing the bulk of rope moving out of New York at a price of about 4.50 cents per pound f.o.b. shipping points for No. 1 domestic rope, although dealers as a rule tell of being unable to induce manufacturers to pay quite this much. Strings are moving better than they have in a long time, but at low prices, around 1.50 cents being all the chief consumers offer. Bagging is in limited demand and quotable at a basis of about 2.00 cents per pound f.o.b. New York for No. 1 scrap.

PAPER PRICES IN ENGLAND.

There is distinct evidence of a general levelling up in price, according to the World's Paper Trade Review, which says: In fact, it is becoming apparent that we are nearing the end of paper reductions, and already relative value is assuming shape for the first time in four years. During the week we have come into contact with the following figures: E.S. writing

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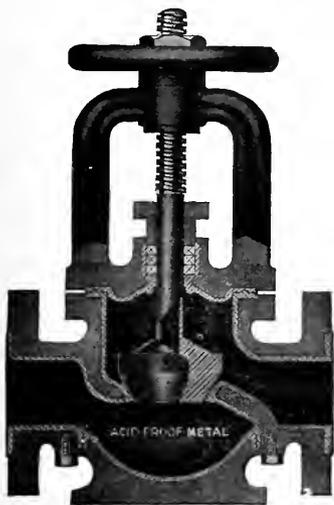
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Very little demand is being made for wrapping paper, despite a rapid tumbling in price. Agents are offering rope brown wrapping at £32 per ton, good quality, English imitation kraft at £70 per ton, glazed casing at £56 per ton; Scandinavian kraft at £60 to £80 per ton, the former price being the lowest we have heard of. Foreign millboards are selling at £45 per ton, best English millboards at £55 per ton, but it must be observed that in quality the English millboard is infinitely superior to the imported product. English boxboards of good quality can be secured at £18 to £20 per ton, which compares favorably with the price asked for direct fulfilment of Dutch straw board. For forward delivery (May or June) of the latter, quotations are based upon £16 10s. per ton minimum, with extras for lining, or for 1½ lb. boards and upwards. Doubtless by the time delivery is

made for orders booked at this price, the English board-makers will be in a position to offer still better terms and value. Another factor influences the situation, and that is the probability of renewed restriction and a change in our fiscal policy. Very few orders are being booked for forward delivery, which do not take cognisance of the fact that revenue may have a very great effect upon the selling price of imported goods.

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EDITORIAL

OUR NEIGHBOUR TO THE SOUTH.

Under the title, "Our Neighbour to the North," our friend, the contributing editor of Paper has something to say in regard to the embargo on pulpwood which can hardly be allowed to pass without comment, although we do not desire our remarks to be construed in the nature of a dispute.

The writer of the editorial referred to, with a true Republican instinct, looks on the attempt at reciprocity as a blunder that has resulted in a one-sided tariff arrangement, particularly as regards the paper industry in the United States. There can hardly be any connection assumed to exist between the result of the Reciprocity Act and the embargo that certain Canadian provinces have placed on the export of pulpwood, but there is something strangely coincident in the fact that the manner in which the reciprocity legislation was handled by Congress has resulted in free newsprint paper to the American publisher as regards import duties on Canadian paper, while the pulpwood embargo has resulted in strongly encouraging the establishment of new pulp and paper mills in Canada rather than in the U. S.

We quite agree with the implication our contemporary that the U. S. Government has not listened so much to the manufacture of newsprint as to the user of it. To our mind there seems two ways in which the U. S. Government can come to the support of their industry if they wish to retaliate against the embargo placed on pulp wood on Crown lands. One way is to do what should have been done fifty years ago, and that is to require proper forestry methods so as to conserve timber limits to the use of the people, both of the present and of future generations. The other is to lay an import tax upon paper of newsprint grade brought into the U. S. The idea of a retaliatory duty is not at all new, since the Congressional Record of May 3rd, 1913, contains a discussion in which the matter of the embargo was given considerable attention. To quote from page 1002: "Most of the forests in Canada are owned by the Provinces, and are called 'Crown Lands.' The right of stumpage is leased or sold, and there is a restriction in all the leases or sales providing that the wood shall be manufactured in Canada. That is considered a restriction. Paper made from that pulpwood, or from pulp that is made from that pulpwood, does not come in free. The Treasury Department has ruled where paper is made partly from pulpwood that is

cut on private lands, they will ascertain the proportion of the pulpwood that was had in the manufacture of paper and admit free the proportionate part made from the pulpwood cut on the private lands and impose a duty on the proportionate part made from pulpwood cut on the Crown Lands." Thus we see that there has been in existence for at least six years the machinery intended to compensate the American industry for any inconvenience to the industry in the U. S. that might be caused by the restriction on the export of pulpwood. It looks a bit awkward—hindering, rather than helping the paper maker.

As to the intimation by our contemporary that "the export prohibition comes dangerously near confiscation" we may say that the licenses on timber limits are renewable annually and are understood to be terminable at the wish of either the holder or the government. Further than this it is generally understood that certain pulpwood limits have greatly appreciated in value even to the extent of from 200 to 400 per cent. so that the expense of holding them is more than compensated by this condition. There is probably not a single good limit held by American concerns that could not readily be disposed of at a good, if not a handsome, profit.

As to whether or not there is an argument to justify the embargo we should like to point out the condition in which American mills now find themselves. Not many years ago enormous quantities of timber were cut on the hill-sides of Maine and floated down the three great rivers to the sea. Saw-mills were the basic industry of many Maine towns, and the Pine Tree State got its name from the wonderful store of this timber that nature had planted there. What has happened to it? The hill-sides were stripped bare, the slash was left to breed rot and fungus and insect pests, and to encourage fires that deprived the soil of its power to reproduce another forest crop even if a thought were given to the need for reforestation. The result is that even Bangor, the city pointed out in the geographies as the lumber centre of the United States, has brought in cargoes of pine boards where streams of vessels once carried them out. Naturally the population that depended on this industry for their livelihood has had to take up other pursuits or move elsewhere. There is practically no more pine in Maine. What has happened to pine is happening to spruce. Lumber mills are sawing this now that the old king of the forest is deposed and this use of spruce makes pulpwood more expensive.

The enormous drain on the coniferous forest is increasingly felt, and the pulp mill and the lumberman are going further and further into the wilds to get the material needed. Even to-day, with the shadow of timber famine falling across the path of the lumber and the pulp and paper industries, hardly any serious attempt is being made to re-establish the forest anywhere in the United States.

With the end of supplies in sight of many mills some of them have turned to Canada. Instead of taking measures to insure a continual growth in their own land they have killed the goose that laid their golden eggs, and have come North in the hope of finding another brood. The fact that the Canada goose has turned out to be somewhat in the nature of an owl and looked with some degree of wisdom and foresight on the situation seems to disturb those who would have raided the nest. Canada has foreseen the danger in time, and intends to have her forest resources continue to contribute to the welfare of future generations of Canadians.

CANADA'S OPPORTUNITY.

We have recently read in an English paper a reference to a statement of Sir Auckland Geddes regarding the present as Canada's opportunity to place wood pulp and paper in England. He, of course, mentions the need of shipping facilities and it is encouraging to note that the man who is soon to occupy the principal's chair at McGill University is so soon showing an appreciation of the importance in Canada's trade of the Pulp and Paper industry. But there is another opportunity which Canada has so far failed to grasp and that is the opportunity of educating her sons in a manner which will better fit them for participation in the great industries of this country which depend upon our wonderful natural resources. There is none more important than the Pulp and Paper industry, although we fully appreciate the position in our national life of mining, agriculture and fishing. None of these, however, besides pulp and paper making, seem to touch so closely the development of all the other natural resources than the forests which furnish the raw material for most of our mills.

Sir Auckland Geddes will soon guide the policy of a great University and one which has a proud record in serving the country. He will bring with him an appreciation of Canada's place in the Empire that can hardly have been gained under other circumstances than the experiences of the last few years. We hope that his vision will include a conception of the part which McGill can play in promoting the progress of our great industries. We hope he will study the relation of the University of Manchester and the paper making school there with the mills of England, and that when he comes to Montreal we may see steps taken for the establishment of a similar or even better school in connection with McGill University where

there are advantages not to be had anywhere in England. He will find here in the Forest Products Laboratories an organization and equipment that have served certain phases of the industry for some time by conducting researches in regard to special problems of pulp and paper manufacture. The full possibilities of the laboratories have by no means been reached as their use has been too closely restricted. There will be found also the Technical Section of the Pulp and Paper Association whose hundred and more enthusiastic members would be only too glad to see a Pulp and Paper School established in Canada, and who would lend every assistance to ensure its success. McGill University with its already excellent department of chemistry could most appropriately offer a course in chemical engineering with what might be called a pulp and paper bias. By associating the courses of instruction in the distinctly technical courses of instruction in pulp and paper technology with the work, or at least with the personnel and equipment of the Forest Products Laboratories, there would be a combination that ought to bring results of utmost importance to the future development of this industry in Canada. So far as we have been advised there has as yet been no complete course broached which would make use of the many opportunities available to McGill University through its possible connections with the Laboratories, the Technical Section and the neighboring pulp and paper mills.

A beginning has been made in the effort of the Technical Section to arrange for summer work in paper mills by students in the Canadian Universities, but this, of course, is simply accepting the instruction as it is given and adding to it a taste of the pulp and paper mill so that the student may be better guided in choosing his future work. We need a definite, well-planned course in Paper Technology in Canada. We feel that McGill University is the logical place for this to be given and we hope that the new principal will institute a move in this direction. He will find many agencies inside and outside the college walls ready to render all possible assistance.

ARE PAPER MAKERS DECEPTIVE?

The Federal Trade Commission held a well attended session at Washington last month, at which the subject of the classification of paper was given serious consideration. It seems that some one has suggested to the Federal Trade Commission that the names commonly given to some kinds of paper may possibly be misleading. There seems to be no charge that these names are intended to deceive anybody. The discussion seemed to bring out a general feeling that there is no possible harm in continuing the use of the names that have become familiar to papermakers, dealers and users, while endless confusion would result if an attempt were made to change these names.

The trade has become so familiar with such terms as bond, vellum, ledger, parchment, crash, onion skin, etc., that it would be a very difficult matter indeed to change the custom even if it were desirable. The claim was made that such a term as Japanese is quite incorrect as applied to any paper not made in Japan. It is obvious that onion skin paper is not made from onion skins, neither is parchment paper made from the skin of the goat, nor is vellum made from the skins of kids, and everybody knows it. The statement is made by the manufacturer and dealer that any such restrictions as are proposed by the Commission at this critical time when the industry is just getting back on its feet would have a most serious effect on its recovering from the depressing situation it is struggling through. It is justly claimed that it would be quite impossible for the American manufacturer, hampered in this way, to compete with other manufacturers in markets where paper is not known by its table of contents, but by its accepted trade name. England, France, Italy, Germany, Scandinavia and Canada will continue to sell their wares under the familiar names, and we do not anticipate that the Federal Trade Commission will do anything so foolish as to deliberately tie the hands of the American papermaker by any such crazy restrictions as have been proposed. The only point where there seems to be a possibility of mis-branding in an intentionally deceptive sense is in the matter of hand made papers. The possibility of imitating a deekle edge on the paper machine as well as the possibility of making certain machine moulded papers makes it very difficult if not impossible for anybody except the very expert person to distinguish between such papers and the real hand-made sheet. To call such a sheet hand-made is certainly fraud. But even in this case there is still the possibility of enlisting the regular course of legal procedure to make it very unpleasant for the person who attempts such deception. Kraft and manila papers are also grades that sometimes do not live up to the reputation attached to their names.

To our mind the cure for such difficulties as may be feared, due to the use of the accepted trade names is the specification. If a concern wants an all-rag bond, a pure sulphate kraft, a manila with not over 20 per cent sulphite, or a book paper with 15 per cent clay, it is a simple matter to say so in the contract, and a chemist will very soon tell whether the conditions are met. Here is a place to apply a little scientific common sense and not muddling interference.

All chemists and chemical engineers in Canadian pulp and paper mills are expected to attend the Dominion Chemistry Conference at the Windsor Hotel, Montreal, Friday and Saturday May 16 and 17.

YELLOW PINE IS NOT ALL THAT IS WASTED.

In a recent number of the Pulp and Paper Magazine we had occasion to refer to an article by Arthur D. Little's article. Another engineer now enters the *distic Monthly* and to several letters discussing the subject of using yellow pine waste in Pulp and Paper mills as well as other subjects brought up by Mr. Little's article. Another engineer now enters the discussion. Mr. Joseph Wallace relates his experience in purchasing slabs, edgings and other saw-mill waste for a paper company in Mississippi for which he paid \$.50 a cord in 1909. Mr. Wallace does not give an account of the results of this purchase nor are we advised as to whether this is still a source of supply for this mill nor what is the present price of the material.

There seem to be two lessons to be drawn from the statements regarding the availability of this paper making material in the United States. In the first place the American mills have butchered their pulp wood supplies of the species ordinarily used for this purpose. The amount of waste of yellow pine indicated by Mr. Little would more than furnish all the raw material used by American mills. Its use would, of course, necessitate long hauls to present mills or would require moving of present establishments to the vicinity of supply. As far as we know there is no restriction in the United States on either move. If serious attempts are made to convert this waste into pulp and paper it would largely reduce the amount of pulp wood exported from Canada, most of which is obtained from settlers in clearing their land for agriculture, although in some cases settlers have been known to settle solely for the purpose of cleaning up what timber and pulpwood they could log and market. The cutting off of timber requirements for his wood might have a tendency to encourage a reversion of the settler to his former practice, only too largely in vogue, of burning his timber to clear his land. This, of course, can be regulated by more careful supervision and patrolling of forest lands by a forest police force.

It is, of course, newspaper which is the really important product of a forest as far as quantity utilization of pulpwood is concerned. Already we find the cheaper grades of paper being made from woods which are too resinous to be employed for this purpose, but which are adapted to the production of papers from pulp made by the soda or sulphate process. The sulphate process seems to be the one best fitted for the conversion of yellow pine waste. As we have already pointed out the economical utilization of this material requires an intermediate extraction plant for turpentine and rosin and there is some doubt in our mind as to whether there is to be found a market for this material that would pay for the extraction of the quantities available from the amount of wood that can be converted into paper according to the figures of Mr

Little. It is known that sulphate pulp is bleached in European mills, but we are quite sure that this pulp is not made from trees containing anything like the quantities of rosin that are present in the southern pine species. We do not know whether the conditions of pulping and bleaching which works successfully with European woods and apply to their markets would fit in with American conditions.

There is one thing that we do feel sure of and that is a necessity for both Americans and Canadians to take more heed to the way the forest lands are handled. If the American people give the thought and action to Mr. Little's appeal for conservation which the matter deserves we shall find our neighbors replanting enormous areas of deforested timber lands and to some extent we will find a migration of mills to the comparatively cheap timber and water power of the Rockies. The result in a couple of generations will be that American mills will be largely restored in the matter of pulpwood supplies and their dependence on Canadian wood will be that much decreased. By that time it may be anticipated that the purely agricultural lands from which pulpwood can be readily exported will have been cleared of this timber and a balance in this regard will have been reached.

On the other hand if our Canadian Governments do not immediately undertake a thorough-going forest policy which will include the conservative and scientific utilization of our present cuttings, and comprehensive reforestation, our Canadian mills will become worse and worse off as regards their pulpwood supplies. Some mills are already beginning to feel seriously the pinch of bringing their pulpwood long distances and the burden of their expense is increasing. The time will surely come when the limit will be reached beyond which the mill cannot transport its wood and continue to live at prices which will be quoted by the mill that has foreseen these difficulties and provided for a convenient and continually productive pulpwood supply.

If Mr. Little's article and the discussion of it bring about a real improvement and awakening to conditions as they are and as they ought to be the end and object of his communication will have been served. Let us not only keep the embargo, but put more restriction on the Canadian lumberman who would jeopardize by careless and wasteful methods, the whole future of industries dependent on the forest.

BE CAREFUL OF FIRES.

Summer is coming and it may not bring so many rain clouds as last year, or serve so efficiently in protecting our forests from fire. The great stretches of pulpwood timber in Ontario, Quebec and New Brunswick were almost immune from serious fires last year. This was due in part to efficient protective organizations where they existed, and to the kindness of nature where they did not. With the ex-

ception of the sea-planes that will soon be scouting for fires in the St. Maurice Valley we have been unable to note any particular improvement in fire protective organizations in other provinces. New Brunswick is moving forward and Ontario has made a start, but there is a long way to go before the goal of the conquered fire fiend is reached or even the success of Quebec is duplicated. Farmers have learned that the weather is not to be relied on, and those foresters or governments entrusted with the protection of the forest who leave it to the weather man to prevent fires are doomed to disappointment. Past experiences are soon forgotten, especially by those who had nothing at stake and suffered no loss in connection with them, but the Province of Ontario will never entirely recover from the Matheson fire nor will the State of Minnesota from the catastrophe of last summer. Yet the danger of just such misfortune hangs over many parts of the Dominion to-day, and the danger will increase as the warm days come, and the old slash becomes tinder awaiting only the pipe ashes of the hunter, the neglected camp fire of the prospector, the spark from the passing locomotive or the neglected brush fire of the settler to send the whole district up in smoke.

The Forestry Branch of Ontario is striving to educate the people of that province to the need for greater care, and in this effort has prepared a couple of calendars that will be a constant reminder of the danger of fire and the duty of the individual. One of them shows the camp fire being properly extinguished. The other shows, in brilliant colors, the neighboring forest consumed by the flames and the settler hurrying from the cabin with what few possessions he can carry on his back, not even sure that he himself, can escape the fate that will soon overtake his little home.

Canadians have feared this, the worst enemy of the settler, the lumberman, and the future prosperity of the Dominion, ever since they first settled in these great forests. Fearing fire and repeatedly fighting fire has not yet taught the majority of our people the necessity for preventing fire. They do not seem to realize how easy it is to stop a fire from starting even though they may know from experience that it may become impossible for human efforts to stop it from spreading. The problem is fundamentally one of education, and though the lesson is an important one it has proved very costly, and has not yet been really learned. The Forestry Branch of Ontario along with other organizations interested in the problem is trying to do its part and we venture to predict that there is no effort that will bring greater results than a successful attempt to educate the Canadian people to the danger of fire and in the means of preventing it.

Let us all follow the advice of the Forestry Branch Calendar, and **Be Careful of Fires.**

Census of Pulp and Paper Industry, 1917

(Prepared in collaboration with the Dominion Forestry Branch; The Department of Crown Lands, Nova Scotia; The Department of Lands and Mines, New Brunswick; The Department of Lands and Forests, Quebec and the Department of Lands, British Columbia.)

Introduction and Summary.

A considerable growth in the pulp and paper industry of Canada is shown by comparing the statistics of 1915 as given in the Census of Industry for that year, with the production in 1917, as presented in the present report.

In 1915 the number of active mills was 80, and the value of production \$40,348,001. In 1917 there were 83 mills in operation, with a production of \$96,340,327, an increase in the latter year of nearly 140 per cent.

Another important measure of growth is found in the consumption of pulpwood, which in 1915 was 1,405,836 cords, according to the returns of the Forestry Department, and in 1917 was 2,104,334 cords, or an increase of nearly 50 per cent. during the same period. The total cut of pulpwood was 2,355,550 cords in 1915 and 3,122,188 cords in 1917, exports of pulpwood having risen from 949,714 cords in 1915 to 1,017,854 cords in 1917.

The increase in land, buildings and fixtures was \$10,078,229 or a gain per cent. of 13.53; in machinery and tools, the increase amounted to \$27,410,331 or 86.04 per cent.; in materials on hand, stocks in process, etc., the increase was \$10,648,149 or 61.1 per cent.; and in cash, trading and operating accounts, etc., the increase was \$4,913,893 or 48 per cent. The increase in the total capital investment was \$53,050,602 or 39.66 per cent.

TABLE I.—Wood-pulp Production, Use and Sale by Classes of Mills, 1917.

Kinds of pulp by provinces	Pulp Mills Moulin à pulpe				Pulp and paper mills Moulin à pulpe et à papier				All mills making wood pulp Tous moulins faisant la pulpe de bois			
	Total production		Made for own use		Total production		Made for own use		Total production		Made for own use	
	Production totale	Pour la consommation	Made for Sale	Value	Production totale	Pour la consommation	Made for Sale	Value	Production totale	Pour la consommation	Made for Sale	Value
	Tons of 2,000 lbs Tonnes de 2,000 liv.	Tons of 2,000 lbs Tonnes de 2,000 liv.	Tons of 2,000 lbs Tonnes de 2,000 liv.	Value	Tons of 2,000 lbs Tonnes de 2,000 liv.	Tons of 2,000 lbs Tonnes de 2,000 liv.	Tons of 2,000 lbs Tonnes de 2,000 liv.	Value	Tons of 2,000 lbs Tonnes de 2,000 liv.	Tons of 2,000 lbs Tonnes de 2,000 liv.	Tons of 2,000 lbs Tonnes de 2,000 liv.	Value
British Columbia												
Ground wood	—	—	—	—	65,620	65,438	182	3,269	65,620	65,438	182	3,269
Soda fibre	—	—	—	—	—	—	—	—	—	—	—	—
Sulphate fibre	25,539	—	25,539	1,866,925	17,853	17,811	42	3,215	43,392	17,811	25,581	1,870,140
Sulphate fibre	801	—	801	56,250	2,059	—	—	—	2,863	2,059	801	56,250
Other fibre	—	—	—	—	—	—	—	—	—	—	—	—
Other miscellaneous products	—	—	—	644,707	—	—	—	—	—	—	—	644,707
Totals	26,343	—	26,343	2,566,912	83,332	85,308	224	6,484	111,975	85,308	26,547	2,573,396
New Brunswick												
Ground wood	7,245	—	7,245	157,264	—	—	—	—	7,245	—	7,245	157,264
Soda fibre	—	—	—	—	—	—	—	—	—	—	—	—
Sulphate fibre	41,009	—	41,009	3,172,189	—	—	—	—	43,009	—	41,009	3,172,189
Sulphate fibre	8,086	—	8,086	599,667	—	—	—	—	8,086	—	8,086	599,667
Other fibre	—	—	—	—	—	—	—	—	—	—	—	—
Other miscellaneous products	—	—	—	—	—	—	—	—	—	—	—	—
Totals	58,340	—	58,340	3,929,119	—	—	—	—	58,340	—	58,340	3,939,119
Nova Scotia												
Ground wood	20,355	—	20,355	413,658	—	—	—	—	20,355	—	20,355	413,658
Soda fibre	—	—	—	—	—	—	—	—	—	—	—	—
Sulphate fibre	—	—	—	—	—	—	—	—	—	—	—	—
Sulphate fibre	—	—	—	—	—	—	—	—	—	—	—	—
Other fibre	—	—	—	—	—	—	—	—	—	—	—	—
Other miscellaneous products	—	—	—	—	—	—	—	—	—	—	—	—
Totals	20,355	—	20,355	413,658	—	—	—	—	20,355	—	20,355	413,658
Ontario												
Ground wood	24,381	—	24,381	799,972	48,239	257,025	29,211	988,181	310,620	257,025	53,595	1,788,153
Soda fibre	—	—	—	—	560	560	—	—	560	560	—	—
Sulphate fibre	61,973	—	61,973	5,545,526	103,290	71,132	32,065	1,222,668	105,173	71,132	34,041	7,305,194
Sulphate fibre	12,981	3,224	9,757	734,946	—	—	—	—	12,981	3,224	9,757	734,946
Other fibre	—	—	—	—	154	154	—	—	154	154	—	—
Other miscellaneous products	—	—	—	—	—	—	—	—	—	—	—	—
Totals	99,335	3,224	96,111	7,040,444	396,133	328,871	61,282	2,810,849	489,488	332,095	157,393	9,801,293
Quebec												
Ground wood	221,281	—	221,281	6,968,706	298,610	276,762	21,848	674,210	519,891	276,762	243,129	6,742,916
Soda fibre	—	—	—	—	4,136	4,136	—	—	4,136	4,136	—	—
Sulphate fibre	22,668	—	22,668	1,508,605	126,191	81,105	45,086	2,760,754	148,869	81,105	67,754	4,269,359
Sulphate fibre	42,294	—	42,294	2,350,609	69,630	25,626	44,004	3,297,983	111,924	25,626	86,298	5,648,922
Other fibre	—	—	—	—	—	—	—	—	—	—	—	—
Other miscellaneous products	—	—	—	578,626	—	—	—	—	—	—	—	578,626
Totals	286,243	—	286,243	10,506,546	199,097	387,069	110,938	6,732,917	784,250	387,069	397,181	17,239,493
Canada												
Ground wood	273,262	—	273,262	7,439,599	650,469	599,225	51,244	1,665,660	923,731	599,225	324,506	9,105,259
Soda fibre	—	—	—	—	4,136	4,136	—	—	4,136	4,136	—	—
Sulphate fibre	127,650	—	127,650	10,226,320	247,244	170,048	77,196	4,586,037	374,894	170,048	204,846	14,812,957
Sulphate fibre	89,704	3,224	86,480	5,608,427	71,689	27,685	44,004	3,297,983	161,393	30,909	130,484	8,906,410
Other fibre	—	—	—	—	154	154	—	—	154	154	—	—
Other miscellaneous products	—	—	—	1,222,323	—	—	—	—	—	—	—	1,222,323
Totals	400,915	3,224	407,392	24,496,679	973,692	801,248	172,444	8,550,290	1,464,368	804,472	659,836	34,016,959

Capital investment in pulp and paper mills for the years mentioned may be summarized as follows:

	1915	1917	Amount	Per cent.
	\$	\$	\$	
Land, buildings and fixtures.....	74,383,608	84,461,837	10,078,229	13.5
Machinery and tools	31,856,265	59,266,596	27,410,331	86.0
Materials on hand, stocks in process, etc.....	17,254,317	27,902,466	10,648,149	61.1
Cash, trading and operating accounts, etc.....	10,242,613	15,156,506	4,913,893	48.0
Totals	133,736,803	186,787,405	53,050,602	39.6

Salary and wage payments rose from \$10,464,399 in 1915 to \$20,358,019 in 1917, an increase of \$9,893,620 or 94.6 per cent. The average number of salaried employees in 1915 was 1,131; this number increased to 1,563 in 1917 or by 38.2 per cent. The average number of wage-earners also shows a remarkable increase, being 14,177 in 1915 and 21,400 in 1917, or an increase of 50.1 per cent.

Paper Board Manufacturers.—In the classification of industries of the Bureau of Statistics an item is included under the designation "Paper board manufacturers." The establishments listed under this heading, four in number, are not covered in the present report, as their product is a re-manufacture of materials produced in paper mills. The statistics for these establishments follow:—

Paper Board Manufacturers.

No. of Establishments.	Capital \$	Salaried employees		Employees on wages		Cost of materials \$	Value of products \$
		No.	Salaries.	No.	Wages.		
4	2,187,172	20	38,629	385	328,758	1,013,459	2,242,697

Arrangement of Report.—The statistics of the report and the present summary deal with the various phases of production, raw materials, capital and equipment, employees and miscellaneous expenses in the order named. A brief review of recent import and export statistics is added.

For the purposes of the investigation, the several concerns were grouped under three headings: (1) mills making pulp only; (2) mills making both pulp and paper; and (3) mills making paper only. Statistics are presented in the tables for each of these groups as well as for "all mills."

Production.

The opening tables of the report (Tables I and II) deal with the production of wood-pulp and paper respectively.

Woodpulp.—The production of wood-pulp in the Dominion in 1917 in all classes of mills amounted to 1,464,308 tons, compared with 1,296,084 tons in 1916 and 1,074,805 tons in 1915. Of the 1917 product, 804,472 tons were used by the producing mills in the manufacture of paper, whilst 659,836 tons were made for sale. The amount received for pulp sold was \$32,824,626, or an average price per ton for all classes of

TABLE II.—Paper production in Canada and the Provinces by Classes of Mills, 1917.

Kinds of products Espèces de produits	In paper mills Dans les moulins à papier								In Pulp and paper mills Dans les moulins à pulpe et à papier							
	Ontario		Quebec		Canada		British Columbia Colombie Britann.		Ontario		Quebec		Canada			
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value		
	Quantité	Valeur	Quantité	Valeur	Quantité	Valeur	Quantité	Valeur	Quantité	Valeur	Quantité	Valeur	Quantité	Valeur		
Newsprint Paper																
In rolls	85	13,900	4,313	103,534	5,618	416,834	76,077	1,151,200	316,962	12,133,786	295,699	16,532,264	651,529	38,451,538		
In sheets	-	-	4,830	313,042	4,830	313,042	72,411	3,800,120	319,117	16,009,000	284,166	10,120,350	998,316	32,220,830		
Hanging papers	-	-	480	33,816	480	33,816	3,821	273,830	3,972	291,687	8,101	420,240	17,246	1,082,727		
Poster paper	85	17,000	421	54,526	821	54,526	85	13,000	-	-	117	36,804	317	56,816		
Book and writing papers	24,313	4,431,149	8,523	2,426,167	37,348	6,542,116	-	-	9,130	1,632,123	6,163	826,599	15,293	2,422,727		
Book, wood in finished ingredient	2,006	34,946	-	-	2,006	34,946	-	-	2,414	406,787	9,917	415,994	6,101	832,751		
Book, raw and in ingredient	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Cover	116	23,600	-	-	116	23,600	-	-	6,046	1,223,536	496	54,479	6,993	1,528,292		
Plate map lithograph, etc.	2,385	1,294,664	7,535	858,269	10,220	2,112,933	-	-	-	-	106	16,728	109	10,752		
Cardboard, Bristol, etc.	2,965	1,169,980	441	9,563	7,739	1,113,228	-	-	-	-	-	-	-	-		
Coated paper	14,720	1,110,444	814	135,288	5,344	1,395,849	-	-	-	-	-	-	-	-		
Writing paper	1,133	81,403	951	1,382,673	5,126	1,640,518	-	-	-	-	1,791	59,818	1,791	310,517		
All other fine paper	30	12,282	117	16,170	197	25,423	-	-	-	-	-	-	-	-		
Wrapping Papers	2,120	418,858	1,274	107,470	3,214	516,278	2,927	594,218	8,143	963,306	35,616	3,932,418	42,016	1,490,427		
Manila, rope, jute, tag, etc.	279	161,000	82	161,000	784	161,000	396	161,000	396	161,000	796	131,120	796	131,120		
Heavy wrapping, mill wrapper	146	2,169	-	-	146	2,169	-	-	146	2,169	32	396	32	396		
Straw wrapping	37	2,169	82	3,963	112	6,125	1,519	53,165	3,042	172,559	6,586	612,013	11,747	837,276		
In case of wood manilla	15	2,600	175	103,435	1,151	103,435	-	-	1,647	164,700	3,493	255,205	3,111	419,063		
Soft paper	563	88,770	-	-	563	88,770	1,408	181,853	3,831	601,660	24,118	2,915,721	26,241	3,164,520		
All other wrapping paper	507	185,328	-	-	507	185,328	-	-	16,328	409,294	8,821	30,628	2,631	64,831		
Boards	2,790	115,649	6	400	2,796	116,049	-	-	16,328	1,062,748	24,118	2,915,721	31,274	3,392,951		
Wood pulp board	266	42,121	6	400	372	42,821	-	-	16,938	1,045,748	34,076	2,127,401	31,611	3,355,253		
Straw board	146	2,169	-	-	146	2,169	-	-	-	-	-	-	-	-		
New board	1,378	86,248	-	-	1,378	86,248	-	-	-	-	773	61,840	773	61,840		
All other boards	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other Paper Products	4,172	791,266	6,189	421,694	18,361	1,112,132	-	-	20,407	900,687,290	900	687,290	900	3,285,897		
Tissue paper	141	169,969	-	-	1,361	152,999	-	-	-	-	18	15,120	18	15,120		
Filtering paper	-	-	-	-	341	254,887	-	-	-	-	600	180,180	600	180,180		
Building, roofing and sheathing paper	4,031	117,000	6,189	421,694	8,396	739,866	-	-	-	-	249	35,453	249	15,154		
Acetate	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Miscellaneous	-	-	-	-	-	-	-	-	20,407	-	-	-	-	-		
All other products	38,137	58,137	-	-	38,137	58,137	-	-	2,000,000	-	-	-	-	-		
Totals	32,882	5,232,042	20,843	3,319,421	53,562	9,181,718	79,001	7,258,918	130,523	31,361,720	310,214	2,888,918	739,872	32,693,656		

pulp of \$49.75. The average value of the different kinds of pulp made for sale was \$28.06 for ground-wood, \$72.31 for sulphite fibre and \$68.26 for sulphate fibre. The export price of mechanical or ground wood-pulp in 1917 was \$28.32 and of chemical pulp \$73.01. The value of the entire output of wood-pulp if calculated at the average price per ton realized for that portion which was sold would be \$72,849,323.

The item "Miscellaneous products," amounting to \$1,222,333 in Table I is almost wholly made up of sawn lumber.

Paper.—Table II shows the quantities and values of the various kinds of paper products by groups for each class of mills, the totals for both classes being as follows:—

	Tons	Value	P.C. ton-	P.C. nage value
Newsprint paper	689,847	38,868,084	80.8	62.4
Book and writing paper	48,141	9,310,138	5.6	14.9
Wrapping paper	50,360	5,646,750	5.9	9.1
Boards	54,080	3,543,164	6.3	5.7
Other paper products.	11,261	1,487,122	1.3	2.4
All other products (value only).		3,438,107		5.5

The newsprint group accounts for 80.8 per cent. of the tonnage and 62.4 per cent. of the value; book and writing paper for 5.6 per cent. of the tonnage and 14.9 per cent. of the value; wrapping paper for 5.9 per cent. of the tonnage and 9.1 per cent. of the value; boards for 6.3 per cent. of the tonnage and 5.7 per cent. of the value; and other paper products for 1.3 per cent. of the tonnage and 2.4 per cent. of the value. The remaining item for which no tonnage is given represents but 5.5 per cent. of the total value of all production.

The average value per ton for each group was as follows: Newsprint \$56.35, book and writing papers \$193.40, wrapping paper \$112.12, boards \$65.50 and other paper products \$132.06.

(To be continued.)

DIDN'T KNOW THEY HAD A STRIKE.

Word comes from Watertown, N.Y., that a strike which has been officially in existence in five New York paper mills, and which also included the Don-nacona Paper Co., has been declared off. There is now no objection on the part of the International Brotherhood of Paper Makers to members of the Union or their sympathizers accepting employment in these mills along with non-union workmen.

When this news reached officials of the Don-nacona Paper Co., the statement was that this is the first they knew they had a strike, so completely has the mill adjusted itself to the absence of union workmen and so well has the organization trained paper makers from their own ranks. It is pleasant, however, to note that better relations now exist between the union and these paper mills.

There is a natural law relating to belting that is not generally known, but which is nevertheless of value in practice. The hug or adhesion of a belt is as the square of the number of degrees which it covers on the pulley. For example, a belt that covers two-thirds of the circumference of a pulley requires four times the power to make it slip that it does when it covers only one-third of the same pulley.

PASTE THIS IN YOUR HAT.

To assist buyers of Bonds and Linens, Flat Writings and Ledger Papers, in making our specifications for their needs which will conform to the new plan of manufacturing to Standard Substance Numbers, this table has been prepared by the Howard Smith Paper Mills, Ltd.

The Substance Numbers mean pounds to 17 x 22; i.e., 17 x 22 No. 13 is 13 lb. Folio No. 16 is 16 lb. Folio No. 20 is 20 lb. Folio, and so on.

The number in any other size is to the Folio basis; i.e., 17 x 28 No. 28 is 28 lb. Folio basis (actual weight 35.5 lbs.) 19 x 24 No. 16 is 16 lb. Folio basis (actual weight 19.5).

Soon numbers will have become as familiar to the minds as weights, but until that time it will be well for the buyer to consult the list in making out specifications. That is to say, if you have been buying 17 x 28—36 lbs., find the nearest weight in the table, which is 35.5 lb., and order No. 28; or if you have been buying 19 x 24—20 lb., the nearest weight is 19.5 lbs., order No. 16.

In ordering odd sizes all that is necessary to determine the Folio basis desired, then specify this Folio basis, i.e., Substance Number together with the size of the sheet wanted and the number of reams required.

Copies on stiff cardboard may be had on application.

Table Showing Actual Weights (figured to 1/2 lb.) of Standard Substance Numbers

SIZE	SUBSTANCE									
	No. 13	No. 16	No. 20	No. 24	No. 28	No. 32	No. 36	No. 40	No. 41	
14 x 17	8.5	10.	12.5	15.5	18.	20.5	23.	25.5	28.	
14 x 34	16.5	20.5	25.5	30.5	35.5	40.5	46.	51.	56.	
15 x 19	10.	12.	15.	18.5	21.5	24.5	27.5	30.5	33.5	
16 x 21	11.5	14.5	18.	21.5	25.	28.5	32.5	36.	39.5	
16 x 26	14.5	18.	22.	26.5	31.	35.5	40.	44.5	49.	
16 x 42	23.5	29.	36.	43.	50.5	57.5	64.5	72.	79.	
17 x 22	13.	16.	20.	24.	28.	32.	36.	40.	44.	
17 x 26	15.5	19.	23.5	28.5	33.	38.	42.5	47.5	52.	
17 x 28	16.5	20.5	25.5	30.5	35.5	40.5	46.	51.	56.	
17 x 44	26.	32.	40.	48.	56.	64.	72.	80.	88.	
17 x 56	33.	40.5	51.	61.	71.5	81.5	91.5	102.	112.	
18 x 23	14.5	17.5	22.	26.5	31.	35.5	40.5	44.5	48.5	
18 x 46	29.	35.5	44.5	53.	62.	71.	79.5	88.5	97.5	
19 x 24	16.	19.5	24.5	29.5	34.	39.	44.	49.	53.5	
19 x 26	17.	21.	26.5	31.5	37.	42.5	47.5	53.	58.	
19 x 28	18.5	23.	28.5	34.	40.	45.5	51.	57.	62.5	
19 x 30	20.	24.5	30.5	36.5	42.5	49.	55.	61.	67.	
19 x 48	31.5	39.	49.	58.5	68.5	78.	88.	97.5	107.5	
20 x 28	19.5	24.	30.	36.	42.	48.	54.	60.	66.	
20 x 56	39.	48.	60.	72.	84.	96.	108.	120.	132.	
21 x 32	23.5	29.	36.	43.	50.5	57.5	64.5	72.	79.	
21 x 33	24.	29.5	37.	44.5	52.	59.5	66.5	74.	81.5	
22 x 25 1/2	19.5	24.	30.	36.	42.	48.	54.	60.	66.	
22 x 34	26.	32.	40.	48.	56.	64.	72.	80.	88.	
23 x 28	22.5	27.5	34.5	41.5	48.	55.	62.	69.	76.	
23 x 31	25.	30.5	38.	45.5	53.5	61.	68.5	76.	84.	
23 x 34	27.	33.5	42.	50.	58.5	67.	75.5	83.5	92.	
23 x 36	29.	35.5	44.5	53.	62.	71.	79.5	88.5	97.5	
24 x 38	31.5	39.	49.	58.5	68.5	78.	88.	97.5	107.5	
24 x 48	40.	49.5	61.5	74.	86.	98.5	111.	123.	135.5	
26 x 32	29.	35.5	44.5	53.5	62.5	71.	80.	89.	98.	
26 x 33	30.	36.5	46.	55.	64.	73.5	82.5	92.	101.	
26 x 34	30.5	38.	47.5	56.5	66.	75.5	85.	94.5	104.	
26 x 38	34.5	42.5	53.	63.5	74.	84.5	95.	105.5	116.5	
27 x 40	37.5	46.	58.	69.5	81.	92.5	104.	115.5	127.	
28 x 34	33.	40.5	51.	61.	71.5	81.5	91.5	102.	112.	
28 x 38	37.	45.5	57.	68.5	79.5	91.	102.5	114.	125.	
28 x 40	39.	48.	60.	72.	84.	96.	108.	120.	132.	
28 x 42 1/2	41.5	51.	63.5	76.	89.	102.	114.5	127.5	140.	
30 x 38	39.5	49.	61.	73.	85.5	97.5	109.5	122.	134.	
31 x 53	57.	70.5	88.	105.5	123.	140.5	158.	175.5	193.5	
34 x 44	52.	64.	80.	96.	112.	128.	144.	160.	176.	

Endless Leather Belts

In their house organ, the *Amphibian*, *Sadler & Haworth* make some very good suggestions in connection with the important problem of belts.

One very important and valuable quality of the leather belt, to which sufficient attention is not given, is the facility with which it may be made endless, and the great advantages which characterize an endless belt in its smooth operation over the pulleys and its freedom from fastening troubles. It is quite possible to make endless Rubber, Balata and Stitched Canvas belts, but this can be done satisfactorily only at the factory in the process of its manufacture, involving a delay of a week or ten days, which is in most cases prohibitory. Endless joints in these belts, too, are without the special convenience of the endless joint in the leather belt because of the fact that when they stretch, and shortening becomes necessary, it is impossible to do anything with the factory point. It cannot be opened and remade after a piece has been cut out, but the only recourse is to cut the belt, and make a new joint with laces or hooks, after which it is no longer an endless belt, and all the advantage of it once having been endless is lost. It also is not possible with these belts to make a satisfactory joint over the pulleys, but otherwise must be restricted to those places where it may be possible to open the shafting, or where the two pulleys are outside the hangers. These restrictions make it possible to use the fabric endless belts in comparatively few cases where an endless belt would be desirable.

The leather belt, on the other hand, can be successfully made endless by any good mechanic who is trained to work to line. After the possession of the proper belt clamps and other tools, and a good cement, all of which are readily obtainable, the only problem, and one easily mastered, is to have the belt drawn up straight and the ends square. With very little practice any intelligent mechanic can make a first class joint on a belt in its proper position around pulleys, and to the proper tension. Furthermore, when this belt has stretched a little so that its tension has been decreased, the same intelligent mechanic can open the joint he has made, cut out such a number of inches as may be thought desirable, make a new joint in the same manner as before, all in very little time, and the belt is soon ready for continuous duty, without the objection of a lace or hook joint.

So much of all the belt trouble is due to deficient connection of the ends, that we think we should give some special consideration to the subject and inform the buyer how simple an operation it is to make a leather belt endless, and the advantage of so doing. Those methods of fastening the ends, which require holes to be cut or punched through the material of the belt, necessarily weaken the belt at that point, and when one of them pulls out, as they are likely to do, there results a crooked belt which makes trouble. The various forms of wire lacing, both those inserted by machine and by hand, distribute the strain more evenly over the width of the belt, but are open to the objection that the perforation which they require becomes a point of weakness. No other form of joining the ends of a belt can compare in efficiency and permanency, and in ultimate economy with the endless joint. Though this fact is recognized and there are many endless leather belts run, an endless joint adds so much to the efficiency of the belt, and dispose so

completely of the many annoyances which follow the use of other methods, it would seem to be a wise policy on the part of the makers of leather belting to encourage among their customers the use of belts made endless, and to afford them every facility for doing this work simply and cheaply.

Toward this end we are prepared to supply the necessary clamps, rods and tools to enable our customers to do this work themselves, or where this is impossible to send men from our factory to do same at reasonable charges.

After a little practical experience the facility with which a leather belt may be made endless will soon prove an advantage over any other type of belting. That a belt in which all trouble may be so completely banished by an operation so simple, is worth several times the cost of a belt in which trouble with the joints is constant, will be readily understood by anyone using belting as a means of power transmission.

Should any of our customers desire to have their belt-man given practical instruction in the making of endless belts, we ask you to send him in to our factory at Montreal, where we will ensure that he is given all necessary training.

Corn Cob Adhesive

As previously described, corn cobs are digested with water under pressure at a temperature of 140 to 160 degrees C. for about one hour, after which the resulting product is pressed to remove the absorbed solution and resulting liquor evaporated to about 32-33 degrees Be density. The yield thus obtained was 30-35 per cent. of the weight of the cobs employed.

It is now proposed to subject the solid residue to a second digestion with water under the same conditions as described above and to use the resulting solution to digest a fresh charge of cobs. The final solution is then evaporated as before and the residue redigested with water, etc.

Under these conditions, the total volume of water to be evaporated in concentrating remains about the same as formerly, but an extra digesting and pressing operation is introduced.

The yield of adhesive material (32 degrees Be solution) amounts, under the new conditions, to over 50 per cent. of the weight of the air-dried corn cobs.

It is proposed also to use the waste material for fuel thus reducing the cost of operation.

Extensive data are being collected, concerning the most favorable locations regarding raw material. In cases where a portion of the supply must be shipped it is proposed to consider the possibility of baling to reduce volume.

It is hoped that the way may soon be paved for the large scale manufacture of this product.

In connection with the movement to use sulphite waste liquor for making alcohol, it is interesting to note that the molasses as "miel" which is a by-product of the sugar industry in Cuba will produce 64,000,000 gals. of high grade alcohol. In addition to this, there would be produced 18,800 tons of potash and 4,800 tons of nitrogen as by-products. Most of this "miel" has previously been sent to the United States and Great Britain. It seems likely that converting it in Cuba would only transfer the location off converting plant, and not materially increase the supply of alcohol.

Need of Science in British Paper Mills

The following communication to the World's Paper Trade Review is quite apropos of conditions in many mills on this side. Some Canadian mills are taking the right course by "planting" chemical students this summer.

What are we going to do? This question can be asked and answered according as we emphasize various words in the sentence. What are we going to do? Something or nothing; make paper as soon as we get sufficient raw materials and coal. One mill may say: "We are glad to see the war over; we shall in time get our men back; the mill will once again be on the Monday to Saturday stunt; back to the old days."

Yes, I fear too many mills will go back to the old days and the old ways. What are we going to do? Are we going to get a move on and in what direction? Keep up the prices and hang the quality? Is that the move?

Am I talking wildly when I say there are paper-makers in this country who would be quite pleased to see the war-time conditions still prevail? Think of it. Now is the time we should be doing something to improve the old. Stationers and printers will ask for, and demand, something better.

Germany—confound the word—have we not heard it often enough since 1914? We are not going to be so pig-headed as not to look for good work that may have been done somewhere in Germany. We as paper-makers are not going to pick German brains; let us use our own, as the German manufacturer used his. He applied the principles of papermaking in a scientific way. He elaborated them scientifically. Result: Improvements in quality co-incident with economies in the processes of manufacture.

Unscientific Papermakers.

We had many ideas, it is true, but the elaborating and application of them were too often left to the German, and the results were lost to us. Why? Because—and I say it with full knowledge—as paper-makers we are not scientific. How many mills in this country have a fully qualified, expert chemist? One who has specialised in the practical application of scientific principles to all the departments of the process of manufacture. I do not refer to the youth or man who bosses around the soda recovery plant, taking periodic samples of ash, waste lime and caustic liquor, tabulating his days work in terms of percentage of NaO. Nor to the person who weighs out one gramme of paper, burns it till the ash is white, and whose work is represented as percentage of clay. No, emphatically no. They are not chemists, but the fault is not theirs; it lies with the mill management. The writer saw him in the machine house, and he was told that the "Lab." was his place. "Go and stay there; I will know where to get you if I want you."

Value of the Specialist.

The word "chemist" is somewhat of a misnomer. The individual is, or should be, a specialist or expert. The real active mill manager in all but name, and in many cases, in name also. If, as papermakers, we are going to do something in the future; that is, something better than we have done in the past, then we must look to our specialists. They really exist, but have seldom been permitted to occupy their correct positions in paper manufacture and mill economy.

Owners, think over it. Directors, think over it. Managers, think over it. The specialist—call him

chemist if you will—is with you, and not against you. Give him his real opportunity now, and he will justify it. He will pull you out of many a difficulty. Do not run away with the idea that because you started in the cutter-house, filling the broke-bag with deckle parings, or because you have "let down" a beater, or because you have set the stuff-cock, and you are now manager, you know everything. You don't, and neither does the specialist. But he has had opportunities you never had. It is not your fault; but it is to his advantage.

The real active chemist, specialist, expert, call him what you like, should occupy the place of importance in every progressive paper mill which is his due. If you, owners, directors, managers, would only open your eyes to the fact, then you should and you would get a better sheet, a better price, and a better profit.

In this respect the German manufacturer beat us. Even if we despise the whole race, we must own up to the fact that while we slept, the German was very much awake. He employed chemical experts, and they were the real controllers of the mills. Some of my readers have in times of peace visited paper mills in Germany. Let me ask them how often they have been introduced to "Herr Schmidt, our chemist." I predict, never. They may have been introduced to "Herr Schmidt," and it ended there.

Visit a mill at home and if a chemist is employed the manager is always particular to say, "Mr. Smith, our chemist," followed by a significant wink, which, being properly interpreted, means: "Hook it to the roaster house, and stay there." Not so with Herr Schmidt. He stayed with you, and drew your leg as only a German can, and all the time you were unaware of the fact that he was the mill chemist and specialist. You were out for information, and got very little of importance; he was out for information, and got all he wanted. If those of my readers who have been there will now tax their memories I think I can hear them one and all say, "Exactly, quite right."

Managing directors of paper mills in this country are often men who have had office training. So-called business men, with the idea of saving pennies, forgetting that a penny saved may, and often does, cause the loss of thousands and tens of thousands of pennies, not to mention pounds. The so-called business man should never dictate regarding the details of any manufacturing process. In this his business training is of absolutely no value. Let us pocket our pride and our old-fashioned methods, and take certain parts out of certain pages of the German book. Now is the time. It might have been difficult five years ago; to-day it is easy.

Look to the Future.

If we improve our processes we will improve the quality and turn-out. If a complaint comes in, it should be investigated by a competent man, who should go to the stationer's warehouse, or to the printer's office, make investigations, find out what is really wanted, and locate the fault. If the stationer or printer is at fault, say so, tell him what to do to prevent a recurrence. If the fault is at the mill, hurry back and put it right. In these respects your "business man" is worse than useless—stationers and printers know that, though they don't al-

ways say so, but quietly go elsewhere for their supplies because owing to his ignorance of details of manufacture he is unable to trace faults, and consequently unable to find remedies. The competent man is your chemical expert. A "business man" managing director once said to the writer, "I am not a chemist, and I am not a papermaker, but I am a business man with some commonsense," and then proceeded to talk common and uncommon nonsense.

Put the Chemist in His Place.

Owners, directors, managers, put your chemical expert on his proper plane if you have one; if not, get one. You will not regret it in the future. Your action will be fully justified before you produce another balance-sheet. Germany had a large market for her paper. British papermakers, move now, and secure it. It is within our grasp. If we let the chances of

to-day slip, we shall hear papermakers asking exactly the same question I have already asked, but with the emphasis on another word in the sentence expressing despair, and it will be too late to do anything—"What are we going to do?"

Papermaking is probably the most intricate of all our national industries. Scientific in every detail, and in every department. A good sheet of paper is the result of the application of well-defined principles in chemistry, physics and engineering. By further investigation we shall be able to produce anything which the printer or stationer might demand, but before doing this we must for ever banish the old "rule of thumb," which, if it has any claim to the word "rule," may be summed up thus:—that it is the only "rule" which proves the exception.—N. X. N.

Patronage and the National Forest Menace

By C. D. HOWE, Ph.D.,

Assist. Professor Faculty of Forestry, University of Toronto.

Address Before the Board of Trade of Toronto.

After nearly thirty years of agitation and effort Canada stands almost naked of any forestry practice, of any definite carefully formulated plans for the management of forests. The primary object of forestry practice is to maintain the capital stock in a productive condition. I take this to be the foundation upon which all legitimate business rests — the security of the investment. Business men should make this their initial demand upon the state — a demand in behalf of the forests in which they are part-owners, which yield revenues to the public treasury, and so indirectly reduce the cost of carrying on the country's business, whatever it may be.

One-third of the geographical area of Canada doubtless is incapable of producing trees of sawlog size because of inhospitable climatic or soil conditions. The actual sawlog producing areas probably do not total 500,000 square miles, and at least one-half of this has been burned. The capital values destroyed by fire are incomprehensibly large. The effect of this loss of wealth upon industry is already apparent, for it has forced lumber concerns to seek materials each year farther and farther from the market, which means that the consumer has to pay more and more each year for the products of the forest.

Devastating Forest Fires.

We as consumers are paying heavily to-day for our neglect of this elementary business precaution, yet the failing of timber supplies through the devastation of forest fires is not the most serious aspect of the problem. Thousands of square miles of forest land in the Dominion have been so severely burned by repeated fires that they will lie barren of commercial trees for hundreds of years unless they are planted by man. Other thousands of square miles, less seriously burned, are restocking themselves naturally to valuable species, but these areas are being constantly reduced and transferred into the first class mentioned because of inadequate fire protection.

forest protection, the safety of the forests is still largely in the hands of Providence. I mean it depends upon weather conditions. Things go fairly well until we have an exceptionally dry season. The technique of fire-fighting methods has not been sufficiently developed to cope with the extra dry season. A very effective preventive method, although successfully practised in certain districts in the West, has not yet been employed other than experimentally in the East, namely the disposal of the slash which becomes extremely inflammable in softwood forests, as in the north country. Unless the slash in certain districts is burned at the time of lumbering, we may as well become resigned to periodic forest holocausts. The best fire-fighting organization in the world could not master a situation in which all the odds were against it.

Crime of Political Patronage.

Another reason for this insecurity of the forest, the reason more time and thought have not been put upon the development of fire-fighting methods is largely because they are efficient workmen or even good fire-fighters, but for other reasons.

I have only words of highest praise for the men in charge of the Dominion and Provincial Forestry Branches. There are men at Ottawa; there are men here in Queen's Park, men in nearly every provincial capital, hard-working patriotic men who are giving the best efforts of their lives in the attempt to protect our forest capital, but they are far from successful because in the end they find astride every trail that hideous grinning monster, political patronage. Who is to blame for this state of affairs? Now, I have thought over this matter a good deal and have come to the conclusion that no politician, no official of the Government is to blame they are simply the victims of an inherited political tradition with regard to the methods of handling Government business. You and I are really the responsible parties. The average citizen is to blame because he does not demand in Government business the same standard that he demands

in his own private business. Political patronage is a question of public morals and the problem will be solved only on this ground.

As a Business Proposition.

Our so-called forest revenues are not revenues at all. They represent so much money taken from the capital stock; an average of 1.5 million dollars in Ontario for the past 10 years, and nearly the same for the province of Quebec. It is not revenue at all; it is borrowed money. We are already paying exorbitant interest on it in the steadily rising pulpwood and lumber prices, and will pay a higher rate each year so long as the practice of borrowing is continued. Also, because we are each year reducing our forest capital and so restricting its production we contribute in the aggregate large sums of money to pay the wages of lumbermen in the States instead of paying our own lumbermen. We do this every time we buy Southern pine to furnish our houses and practically every house I have entered in ten years of residence in Toronto contains more or less Southern pine.

This borrowed capital must be restored to the forest either in the form of planting or in the form of regulated logging operations — probably both, if our lumbering and pulpwood industries are continuously to be maintained even at their present capacities. Either method of restoration will be very costly, but we or our children because of previous neglect will be compelled to pay the price. The longer we wait, the higher the price.

Let me point out a great anomaly that very largely accounts for our present forest conditions. Business men will appreciate the point. The Forestry Branch at Ottawa is charged with the care of 25,000,000 acres of Dominion Forest reserves. It has a staff of technically trained foresters. With the exception of settlers' permits and a few odd logging jobs, the activities of the Branch are confined to fire protection. All the licensed lands, all the big logging operations within the Forest Reserves are in charge of another Branch at Ottawa, which has not a forester in it.

The Province of Ontario has around 7,000,000 acres in forest reserves. It has 10,000,000 acres under timber license and practically the same area in pulpwood concessions. There is a Forest Branch with technically trained foresters. There are no better foresters in the Dominion, yet they have no part in carrying out the timber regulations for the licensed lands. That is in the hands of another Branch which has no forester in it.

Managing forests so that they will remain continuously productive is a big job; it calls for men with special ability and special training. Manufacturers do not turn over their technical problems to clerks.

A PAPER MILL IN FRANCE.

Though in active service with the American Expeditionary Forces in France, Lieutenant Winship Hodge was unable to forget his duties back home and when an opportunity came visited a paper mill near his training camp, says a correspondent to the Paper Mill.

A Hodge takes to paper just as readily as a duck to water and his little journey proved of interest, and is well worth repetition. He is now holding down his old position of general purchasing agent of the Kalamazoo Paper Company, and was in his office when asked to tell what he really thought of French paper mills as far as able to judge by the one visit made.

"They are certainly different from the American paper mill," was his reply. "The single mill that I visited was in the village of Blanzet, near the city of Clermont Ferrand, in the mountainous regions of Central France. One day I was exchanging confidences and news with a French officer and told him that I was in the paper business in America. He then imparted the information that a mill was located about five miles away. My first brief leave from camp I used to bike over to see this mill.

"My first surprise came in looking for it. American mills are usually located adjacent to water power and on the line of a railroad. This particular mill at Blanzet was perched high on a hill overlooking the village and from ten to twelve miles from the nearest railroad. Every pound of coal used by the mill had to be hauled that distance by team.

"Blessed with a slightly location, the mill boasted architecture suited to the site. It was built of stone and the exterior view more resembled a public library or art gallery than a manufacturing plant. The interior was scrupulously clean and well finished. Most of the wood work was varnished and every bit of equipment was kept in the best of order. The machine, German built, trimmed a finished sheet about 30 inches wide and was able to turn out about four tons every 24 hours.

The beaters were small copper tubs, set in wood frames.

"Another surprise in store for me was in the inspection of the water supply. I found that it came from springs away up in the foot hills of the mountains and was clear as a crystal and ice cold. An artificial race had been constructed, ample to handle all the flowage from the many springs. Thousands of brook trout sported in this race. The waterway was so constructed that it formed a water fall 200 to 250 feet high, furnishing ample power to operate a turbine and drive the mill equipment.

"The output of this mill was photographic paper and high grade blotter. The man who took me through told me that they were able to dispose of their entire output of photographic paper at three francs, or about 60 cents a pound. The blotting paper produced was the highest grade I ever saw. It was made of soft white rags, washed absolutely clean and then spread on the floor, first a layer of rags and then a layer of chloride of lime. This was continued for several thicknesses. The lime destroyed the fibre in the rags and left the substance soft and fluffy.

ORIGIN OF BOND PAPER.

Mr. C. A. Crocker, before the Federal Trade Commission, speaking at some length on the word "bond," explained its origin with the Crane mills. He said that years ago the Crane Company (as it does to-day) manufactured a bank note paper. Someone got hold of some of this bank-note paper and used it for printing a bond on it. This party liked the paper, wanted to print some more bonds and wrote to the mill for some "bond" paper. The mill did not know what was wanted and had to ask for further details. That, explained Mr. Crocker, was really the origination of the word "bond." He said that the word "bond" did not indicate any particular quality of paper. He said that in his opinion the finish is one of the characteristics of a bond paper and another is that it is not usually a highly finished paper.

Technical Section

ANOTHER GOOD MAN GONE.

R. W. Hovey, who has been on the staff of the Forest Products Laboratories of Canada since his graduation from McGill University, has resigned to accept a position with the Abitibi Power and Paper Co., at Iroquois Falls, Ont. Since O. F. Bryant left the F. P. L. early last year, Mr. Hovey has been in charge of the Pulp and Paper Division. His experience in this department has been a fine preparation for his new position, where it is understood he will conduct research work in chemical engineering problems connected with the operation and control of a complete newsprint paper and pulp plant. Good luck!

CONTRIBUTIONS TO VOCATIONAL EDUCATION FUND.

Among the first contributions received in the month of April by the Vocational Education Committee of the Technical Association of the Pulp and Paper Industry for the operation of a course of instruction in pulp and paper mill practice were two checks for \$50 each from the Manitowoc Shipbuilding Company, Manitowoc, Wis., and F. C. Huyek & Sons, Albany, N.Y. The Miami Valley (Ohio) paper manufacturers as a group, have pledged \$2,000 to the fund, and Wisconsin paper manufacturers who are members of the Wisconsin Traffic Association expect to raise the sum of \$3,500. (We understand this is accomplished).

A list of the subscriptions received to Saturday, May 3, follows. It should be understood that the sums contributed are for this year's fund, and similar amounts are pledged by the same firms for 1920.

Contributions Acknowledged.

Manitowoc Shipbuilding Company (Machinery)	\$ 50
F. C. Huyek & Sons (Felts)	50
Finch, Pruyt & Co., Inc.	100
Crocker-McElwain Company	100
Port Huron Sulphite & Paper Company	100
B. F. Perkins & Sons, Inc. (Apparatus)	50
Schmidt & Ault Paper Company	50
Remington Paper & Power Company	50
Defiance Paper Company	50
Crane & Company	100
B. D. Rising Paper Company	50
Fort Orange Paper Company	50
Eastern Manufacturing Company	125
Fletcher Paper Company	100
Skaneateles Paper Company	50
Lee Paper Company	50
Total	\$1,125

REVIEW OF RECENT LITERATURE.

B-2. Investigation of tree seeds in Japan. International Rev. Agr., June, 1916, p. 841. The best tree seeds should be taken from a young seed-tree grown in a locality similar in climate to the place where the seeds are to be sown. The persistence of the germinating power of forest tree seeds varies according to species, and is influenced by the conditions under which the seeds are kept.—C. L.

B-2. Thirty-seven years of spruce selection, in Austria. International Rev. Agr., August, 1917, p. 1116. Experiments conducted under the auspices of the Im-

perial Forestry Experiment Institute of Mariabrunn. External factors (quality of the soil, formation of clumps, etc.) have the greatest influence on growth in all the trees examined.—C. L.

B-3. Suitability of wood for constructing mill buildings. W. Kynoch and R. J. Blair, Forest Products Laboratories of Canada. Points out the necessity of preservative treatment of construction timbers in building operations where there is danger of decay. Mercuric chloride (corrosive sublimate) is an efficient preservative. Zinc chloride and sodium fluoride are others. Preservative treatment in mill buildings is necessary only where the conditions are unusually exacting. Suggestions are given as to precautions to be taken in building construction, also means for preventing infection by decay in lumber yards.—C. L.

B-3. Forest protection in British Columbia. Clyde Leavitt, Western Lumberman, October, 1918, p. 71. The forest resources of British Columbia can, under conservative exportation, supply at least five times the present cut without depleting the capital stock. The forest revenue of the province is around \$2,500,000 annually, from provincial Crown timber lands alone. Protection from destruction by fire is, however, an essential pre-requisite to continued forest growth on an adequate basis. Only 28,000 square miles, or 8 per cent. of the total area of the province, now bears sufficient timber to be classified under provincial law as statutory timberland. This leaves the enormous area of 125,000 square miles, upon which the stand is less than 8 M. on the Coast, and less than 5 M. in the interior; 200,000 square miles is incapable of producing timber of commercial value, because of altitude, rock, wet soil, or complete denudation by past fires. The argument is developed to show the urgent necessity for greater expenditures on forest fires protection, particularly in areas of young forest growth.—C. L.

B-4. The contribution of forestry to the problem of public nutrition during the war, in Germany. International Rev. Agr., August, 1917, p. 1127. A review of a German article, showing the very considerable attention paid to this subject in Germany. Potato replaced in the production of alcohol by wood and by residuary waters containing sulphite from the manufacture of cellulose; the use of wood residuary waters containing sulphite and tree-leaves in the production of sugar, etc.—C. L.

B-4. Work of department of aeronautical supplies, Imperial Munitions Board. Major Austin C. Taylor, Western Lumberman, January, 1919, p. 38. Sitka spruce the best adapted to aeroplane construction. British Columbia the only part of the British Empire where supplies of this timber exist. Selective logging used. Under ordinary methods of cutting, only 1 1/2% of lumber is suitable for aeroplane construction. The best grades of Douglas fir were also used in aeroplane work, totaling in November, 1918, 1,382,000 feet, as contrasted with 6,850,000 feet of Sitka spruce. The total shipments and production of aeroplane lumber, spruce and fir, from January to November, 1918, were 35,348,000 feet. When operations were suspended, in December, it was estimated that 40 million feet of spruce timber remained in the woods, and that all told the quantity in the water stood at 50 million feet.—C. L.

B-4. Production of fuel alcohol and wood pulp in connection with the sawmills in B.C. A. Hollden, Western Lumberman, October, 1918, p. 59. Shows that the present output of forest products in British Columbia is far below an adequate proportion of the present stand of timber and of the annual growth. Describes the utilization of sawmill waste in the United States for the manufacture of alcohol, and urges similar developments in British Columbia, at sawmills and pulp mills; alcohol as a future substitute for gasoline. Different kinds of paper pulp; making of mechanical pulp; manufacture of newsprint described; chemical wood pulp; sulphite pulp; soda pulp process; recovery of chemical in sulphate pulp mills; production figures and particulars; market opportunities.—C. L.

B-9. The work of the Philippine Bureau of Forestry. International Rev. Agri., January, 1918, p. 66. A review of the annual report of the Director of this Bureau, 1917. Education of the public; surveying and inspection; investigation; forest school; protection; reforestation lumber trade.—C. L.

B-9. Timber resources of Russia. Timberman, October, 1918, p. 47. The timber area of Russia is approximately a billion and a quarter acres, of which the Government owns three-quarters of a billion acres. Siberia contains half the forests of Asia. Russia's capacity to export timber has been developed to only a fractional extent.—C. L.

B-9. South meets to adopt forestry policy. American Lumberman, January 11, 1919, p. 46. Report of forestry convention of the southern states, held at Jacksonville, Florida, January 6. Necessity for forest research; inventories of existing forest resources; methods of fire protection; policy for railways in this work; need for publicity; problem of cut-over land; forest education; organization by the several states urged; also need for greater appropriations by the Federal Government for fire protection and for a census of the forest resources of the country.—C. L.

B-9. British Columbia's Special Timber Licenses. Ralph A. Logan, Western Lumberman, October, 1918, p. 67. A very large percentage of the valuable timber in the province has been acquired under some form of alienation; this represents only about 5 per cent. of the total area of the province. Of the 11,500,000 acres of privately-owned timberland, 75 per cent. is held under special timber licenses. Describes terms and conditions; ground rent, stumpage dues, forest protection tax, adjustment of royalties, etc. Shows that the great fortunes in the lumber industry have been made from the increase in stumpage values, rather than from profits in operation.—C. L.

B-9. Commercial development of forests in British India. International Rev. Agri., June, 1916, p. 846. The Indian forests comprise no less than 250,000 square miles. An encouraging advance has been made in the commercial development of these forests. Paper pulp is made from bamboos, savannah grasses and firwood. In the Punjab, a concession for the extraction of spruce and silver fir from the Kulu forests for the manufacture of wood pulp has been granted. Tanning materials, manufacture of matches, tea-box industry, manufacture of railway sleepers from sal and deodar; experiments in preservative treatment of less durable species. The Forest Department recognizes that efforts to secure commercial success are as much a part of their duties as the scientific management of the forest property entrusted to their care.—C. L.

B-9. Dominion Forest Reserves, British Columbia. D. Roy Cameron, Western Lumberman, October, 1918, p. 73. Describes what these reserves are, and how they are protected and administered; classes of timber; settlers' permits, timber sales. In connection with the latter, the provision for leaving seed trees, brush disposal, etc., increases the logging costs from 15 to 25 per cent. Where the timber is mature and ready for cutting this is offset by a reduction in the upset price placed on the stumpage. No royalty is collected on timber sales, the stumpage price paid as the cutting proceeds being the only form in which charge is made. Development of grazing resources. Details of administration: forest supervisors, forest assistants, and rangers; lookout stations. The Forestry Branch does not administer the licensed timber berths, which are under the Timber and Grazing Lands Branch.—C. L.

B-9. Logging problems at Woodlands Section. Pulp and Paper Association. Can. Lumberman, October, 1, 1918, p. 27. Report of meeting held at Montreal, Sept. 20, 1918. Discussion by President W. G. Power of added cost involved in leaving woods in better shape; uniform system of logging in eastern Canada; company camps vs. jobbing system; co-operation logging; available timber supplies; use of portable mills to increase utilization of birch and poplar. Paper by Dr. C. D. Howe, of the Commission of Conservation, showing tendency of present methods of cutting to increase the preponderance of hardwoods; susceptibility of balsam to disease; slow growth of spruce and balsam, particularly under shade of old stand, especially hardwoods. Paper by Ellwood Wilson, Forester for the Laurentide Company; necessity for forest research; experimental method; necessity for forest planting, due to depletion of virgin forests over great areas; lack of progress in logging methods; question of mechanical transport; increasing percentage of balsam used in manufacture of pulp.—C. L.

B-9. Timber Sales in New Brunswick. Canada Lumberman, October 15, 1918, p. 34. Lists of properties and purchasers, with prices, of Crown lands, put up for sale at Fredericton, October 3, 1918. This marks a change of policy from the former practice of disposing of Crown timber only under the licensing system. The stumpage prices bid average about double those received on the former basis. The total payment is in the form of stumpage dues, no ground rent being charged, and a specified limited time being allowed for exploitation.—C. L.

B-10. Lumbering activities in Nova Scotia. B. H. Dunfield, Canada Lumberman, October 15, 1918, p. 29. By the time, in 1917, when exports were greatly restricted, due to shortage of shipping, a brisk demand for lumber developed from the United States, shipment being largely by rail. There has been a heavy demand for hardwood, as well as for spruce. Notwithstanding increased costs, the year's business has proved quite satisfactory.—C. L.

B-10. After-war conditions in British Columbia. Norman McLean, Western Lumberman, October, 1918, p. 65. Future prosperity in the lumber industry depends on labor conditions, organization, transportation, and preferential trade within the Empire.—C. L.

PULP AND PAPER NEWS

A charter has been granted to Rutherfords, Limited, with headquarters in Owen Sound, Ont., and a capital stock of \$40,000, to carry on a general advertising, lithographing and printing business, etc. The incorporators of the company are James H. Rutherford, for many years publisher of the Owen Sound Times, E. A. W. Rutherford, and A. D. Creasor, of Owen Sound, and Peter Rutherford, of Toronto, who is a well known advertising manager.

A new organization, which has just been granted a provincial charter, is the Abrasive Wheel and Pulp Stone Co., Limited, with a capital stock of \$40,000, and head office at Mohawk, in the county of Brant, to manufacture and sell pulp stones and all kinds of abrasive stones as well as emery, and carborundum wheels, etc. The incorporators are George H. Battye, Matthew F. Muir, and others, of Brantford, Ont.

The Riordon Pulp and Paper Co., Montreal, have declared their regular quarterly dividend of 2½ per cent on the common stock of the company.

A provincial charter has been granted to Northern Pulp, Limited, with head office in Winnipeg, and a capital stock of \$200,000, to manufacture, buy, sell and deal in pulp and paper as well as lumber, timber and wood products of all kinds, including timber limits.

W. R. Davies, late of the Thamesville Herald, who has purchased the Renfrew Mercury, was presented by the citizens of Thamesville, previous to his departure, with a handsome little booklet, the majority of the pages of which were made up of ten dollar bills.

Paper Sales, Limited, Toronto, have removed their offices from the fifth floor of the Bank of Hamilton building to larger and more commodious quarters on the first floor of the Webster building, 53 Yonge St.

N. L. Martin, secretary of the Canadian Paper Trade Association, has removed his offices from 64 Wellington St., West, Toronto, to 73 King Street West, near the corner of Bay Street, where he has splendidly fitted up quarters in a most central location. Mr. Martin states it is probable that the annual meeting of the Association, which will be held next month, will take place either in Toronto or Montreal, instead of Winnipeg, as at first intended.

John T. Berhalter, of the sales staff of the Interlake Tissue Mills, Toronto, who has been ill, is able to resume his duties.

W. H. Camnard, representing the Hudson-Sharp Machine Co., Green Bay, Wis., was in Toronto last week calling upon the paper trade.

W. B. Fredericks, of Rochester, representing the Diamond State Fibre Co., Bridgeport, Pa., manufacturer of vegetable parchment, glassine and fibre board, was in Toronto lately calling upon the trade.

The accounting department of the Mattagami Pulp & Paper Co., Toronto, will shortly be removed to Smooth Rock Falls, the site of the plant.

J. Hewitt, Jr., President of Paper Sales, Limited, Toronto, has returned from a business trip to Chicago, and other points west, in the interest of the firm.

J. W. Dafoe, editor of the Winnipeg Free Press, who recently returned from Paris, where he participated as a member of the Canadian delegation at the Peace Conference, will be one of the speakers on Editorial Night at the Canadian Press Association, Toronto, on June 6. His subject will be "Canada and the Peace Conference."

The Ontario Department of Lands, Forest and Mines has decided that the use of the hydroplaners in patrolling the extensive limits of Northern Ontario is too costly and impracticable at the present time to be given a trial, and that further developments will be awaited in the use of these machines before they can be put in operation in the province. The ranger system will be employed this season, at any rate, along with watch towers and telephones.

Good progress is reported on the newsprint paper mill enterprise in Winnipeg, which will cost three million dollars. A committee of the city council has been appointed to secure all data regarding costs, manufacture and operation. When this special committee reports back to the council, if the verdict is favorable, arrangements will be made for the submission of a bylaw to the ratepayers and, in the event of the measure being carried, construction on the large undertaking will commence next winter.

T. F. Battle, of Niagara Falls, Ont., acting on behalf of the Dominion Government, has entered suit against the Thorold Pulp Co., of Thorold, Ont., to recover \$16,600. The claim represents extra water power from the old Welland Canal, which is alleged to have been used by the pulp company in excess of its contract with the government.

W. E. Jephcott, of the Dominion Paper Box Co., Toronto, accompanied by his wife and daughter, will shortly leave on a trip to Great Britain and Europe.

Fire broke out last week in the five storey building on Temperance street, Toronto, the first floor of which is occupied by the Canada Linotype Co., and the basement by the United Paper Mills, paper jobbers. The cause of the blaze is unknown. The United Paper Mills report that the damage to their stock in one corner of the building was about \$500, caused by water.

A provincial charter has been granted to the Morrell Pulp and Paper Co., Limited, with chief place of business in Montreal, and a capital stock of \$20,000, to manufacture and deal in paper, pulp, pulpwood, timber and manufactured paper products, as well as to purchase timber limits. The incorporators of the organization are John Morrell, W. G. Röhrer, Wm. Couper, John D. Tennant, Henry S. Couper, all of Montreal.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, May 5.—Business in the paper line improves steadily. With the demand at home and the prospects for export growing brighter all the while there should be a good year's business in hand. Plants which never before cultivated an export connection are now making preparations to do so, and by the end of June it is expected there will be considerably more space available for commercial purposes, whereas there is now only 30 per cent. When the boys are all home from abroad it is felt that rates will fall and cargo space be adequate to take care of some of the big consignments looming up for overseas.

The newsprint investigation will be resumed at Ottawa this week, but how publishers expect there will be any fall in price is more than any surface indication reveals. In another week increased wages will go into effect, averaging from eight to ten cents an hour additional, while the eight hour shifts are being introduced in the majority of the leading mills, which also tends to pile up costs.

There has been a feeling all along that as soon as the peace terms were signed that the control of the newsprint and book paper industry in Canada would automatically cease. The regulation was undertaken as a war measure, and, with the signing of peace the strife will be at an end. The old law of supply and demand, it was believed, would then be reverted to. But there has been introduced in to the Federal Parliament a bill to extend the operation of all war measures until the close of the present session, and this may mean many months yet if, as is predicted, parliament soon adjourns, and a fall session is held. Control, therefore, may go on for some months yet.

It appears as if the book paper investigation is to be resumed, and it is understood that the government auditor has been ordered to Cornwall to investigate the books of the Toronto Paper Mfg. Co. It will be remembered that only one company's books were investigated, and that was the Provincial Paper Mills Co. The auditor reported that he considered, in view of his findings, the company were not asking any undue price for their finished product, and there the matter rested. The users of book paper have since

got busy, and urged upon the government that the books of another company be audited in an effort to show that the manufacturers have been charging too high a figure. What it is hoped to gain by this latest move can not be comprehended. The Provincial Paper Mills Co., according to the statement presented at the annual meeting, showed less earnings than during the previous year, and now the report of the Toronto Paper Mfg. reveals a falling off in earnings. Two years ago the profits of this concern were \$212,749; last year they were \$198,030, and the year just closed disclose a drop to \$162,373. Even one of the mediums using book papers in commenting on the showing states that the decline is undoubtedly due to steadily mounting costs, which have not been compensated for by an equivalent increase in the price of the finished product. It would thus seem that there is not much to be gained by going ahead with the investigation and declaring that the companies are making exorbitant profits by asking too much for their paper when the annual statements tell a different tale.

There is some improvement in the outlook for sulphite pulp and more inquiries are coming in, while more sales have been made. Plants which have either been shut down or have greatly decreased production are beginning to operate more fully. Owing to the book mills on the other side of the line reporting a gratifying gain in business during the past few days orders are commencing to come in with something like the old time demand. The improvement will, of course, be slow, and buying will be on a conservative basis, but the manufacturers all believe that things are on the mend, and from this out there should be more doing. Book sulphite holds firm at \$87.50 to \$90 per ton at mill, while bleached sells at \$100 to \$105.

The ground wood pulp market continues dull, but it is hoped there will be betterment in the near future. Toilet and tissue mills are getting busier, and during the past week there was a reduction of 10 to 12 per cent in tissue papers. Drug papers are half a cent easier, and vegetable parchment has gone down a cent. Otherwise there are no reductions to record.

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES ²⁰⁷⁴ 2075 MURRAY HILL, NEW YORK

We are always in the market
and ready to pay good prices
for

SULPHITES

Bleached and Unbleached of
Canadian manufacture.
Write and let us show you
what we can do.

and prices in all other lines hold tight. There is a rumor that there may be an increase in the near future in some lines of the cheaper book and writing papers which are being turned out at too low a cost in view of constantly mounting expenses of production. The board mills are busy and buying is active, while paper box plants continue to receive additional orders. Some concerns report a scarcity of girl labor, and state if help was available they could employ many more hands.

Coated paper plants are very active, and all other lines are quite busy. It is believed that England will shortly place with the Dominion an order for a quarter million tons of pulp. This would relieve all concerns of their surplus stocks, and cause the industry to become as active as it was before the signing of the armistice. England is looking for a big supply of Canadian groundwood pulp, and when this stock begins to move there will be an improvement in local conditions. Prices will become firmer and things brighten generally.

In sending out a price list of their papers to Canadian customers a well known English firm state that quotations are merely temporary, as it is impossible to show any definite or firm prices until the signing of peace. All orders are taken at the figure ruling on the date of shipment, so that customers will secure the benefit if quotations should fall and prompt deliveries are assured than have been the case for some time past.

Pulp Prices.

F.O.B. Mill.

Groundwood pulp	..\$27.00 to \$29.00
Sulphite, news grade	..\$65.00 to \$75.00
Sulphite, easy bleaching	..\$87.50 to \$90.00
Sulphite bleached	..\$100.00 to \$105.00
Sulphate	..\$85.00 to \$90.00

Paper.

*News (rolls) at mill, in carload lots	..\$3.45
*News (rolls) in less than carload lots	..\$3.52½
*News (sheets) at mill, in carload lots	..\$3.80
*News (sheets) in less than carload lots	..\$3.92½
xBook papers (carload), No. 1	..\$9.75
xBook papers (ton lots) No. 1	..\$10.00
xBook papers (carload), No. 2	..\$9.50
xBook papers (ton lots), No. 2	..\$9.75
xBook papers (carload), No. 3	..\$8.25
xBook papers (ton lots) No. 3	..\$8.75
Ledgers	..18c up
Sulphite bonds	..13½c
Light tinted bonds	..14½c
Dark tinted bonds	..16c
White Wrappings	..\$5.25
Writings No. 2 M.F.	..12¼c up
Coated book and litho, No. 1	..\$12.25
Coated book and litho, No. 2	..\$11.25
Coated book and litho, No. 3	..\$10.50
Coated book and litho, colored	..\$12.50 to \$14.00
Grey Browns	..\$5.25
Writing No. 1 S. C.	..13c up
Fibre	..\$7.35
Manila, No. 1	..\$7.35
Manila B.	..\$5.60
Tag Manila	..\$6.50
Un glazed kraft	..\$9.00
Glazed kraft	..\$9.00
Tissues, bleached	..\$1.20 to \$1.60
Tissue (unbleached sulphite)	..\$1.10 to \$1.50
Tissues, cap	..90c to \$1.20

Tissues, manila	..80c to 1.10c
Natural greaseproof	..15c
Bleached grease proof	..19c
Genuine vegetable parchment	..21c
Bleached white glassine	..22c
Drug papers, whites and tints	..8 to 8½c
Paper bags, manila (discount)	..35 per cent
Paper bags, kraft	..27½ and 10 per cent
Confectionery bags	..34 per cent
Gusset bags (manila)	..35 and 15 per cent
Straw board	..\$75.00
Chip board	..\$75.00
Vat lined chip board	..\$80.00
Filled wood board	..\$83.00
News board	..\$90.00
Double manila lined board	..\$90.00
Manila lined folding board, chip back	..\$87.50
Pulp folding board	..\$95.00
Jute board, No. 3	..\$75.00
Tag board	..\$155.00
White patent coated board	..\$115.00 to \$130.00
Grey folding board	..\$115.00
Pasted board	..\$95.00

*For Canada only.

x These prices are for machine finish, super-calender one-half cent higher.

NEW YORK MARKETS.

New York, May 3.—Moderate activity has characterized the paper market this week and, viewing the situation in its entirety, a fair amount of business has been transacted. Consumers are reported to be still confining their orders to paper immediately needed, but indications are that the requirements of many have increased in a way that they have been compelled to enlarge their buying operations. Prices are maintained in most instances. There have been slight recessions on some grades, principally the high quality descriptions of paper, but no important change has developed in quotations.

Newsprint and book papers continue to be sought in good volume. The former especially is active, and mills almost without exception are running at capacity production to keep their customers supplied. A glance at the size of the local newspapers gives one an indication of the heavy consumption of newsprint the country over. Local dailies which ordinarily run from sixteen to twenty-four pages frequently are putting out editions at present of thirty-four to thirty-six pages. And a significant feature of the situation is that they are so crowded with advertisements that there is nowhere near the customary amount of reading matter in them, which would infer that publishers are keeping the size of their editions down to as low a point as their volume of business will permit. Prices on newsprint are firm, and there is an active demand from the transient trade. Contract consumers are absorbing not only all the supply due them from mills, but are also purchasing numerous spot lots.

A very good business has recently been done by hanging paper mills. Demand for this class of paper has eased off somewhat during the past few days, but manufacturers are reported to still have quite a volume of unfilled business booked which necessitates their operating at close to maximum capacity. This season has been a lively one in the wall paper trade, and the probabilities are demand will continue good for some time in view of the extensive building operations

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in all sections of the country now getting under way.

Magazine and other periodical publishers are absorbing large quantities of paper, with the result that the movement of book papers is steady and undergoing expansion. Quotations are maintained, and there is no sign of manufacturers shading prices. In fact, there is no apparent reason for them to do so, for the great majority of mills are securing enough business to keep them well engaged.

Fine papers rule quiet. Some buying of course is better done, but consumers are placing orders only for hand-to-mouth quantities, and the demand continues to run toward the low-priced lines. Consumers of writings, bonds, and ledgers seem obsessed with the belief that prices are to go lower, and consequently are absorbing supplies only as their requirements develop. Proof is not wanting that some mills are granting concessions on many of their lines to get business, with the result that quotations are irregular. Tissues are moving in comparatively good volume and at unchanged prices. No. 1 white tissue is quotable at between \$1.00 and \$1.10, while No. 2 white and manila are priced at 90 cents to \$1.00, depending on the quality and the amount of paper involved.

Coarse papers are sought in a restricted way. Jobbers report a quiet demand from the consuming trade, and dealers themselves seem determined to keep their stocks down to as low a level as they can. Mills are anxiously seeking business, under which conditions prices naturally are easy.

Boards are in rather a novel position. Demand in the aggregate is light, and mills are running alternately for a few days and then shutting down until they have accumulated sufficient orders to warrant them starting up again. One week reports are to the effect that

board manufacturers are busily engaged; the next it is learned most plants are not operating. Prices are fairly steady at a basis of between \$40 and \$45 per ton for No. 1 chip board.

Ground Wood. There has been little stirring in the mechanical pulp market. Most grinding establishments are kept moderately busy attending to the wants of their contract customers, but demand for spot lots of pulp is decidedly quiet. The monthly review of the paper and pulp markets of the Federal Trade Commission shows that mill stocks of ground wood increased by about 11,000 tons during March, and that on March 31 approximately a month's supply was held by manufacturers. Grinders are offering with freedom, yet there is no marked selling pressure in evidence. About \$26 per ton at the producing mill is the quotation most commonly named on No. 1 spruce pulp, with limited tonnages available in certain directions at \$25.

Chemical Pulp.—A distinctly better demand has prevailed this week for chemical pulp. Consumers have been in the market in larger number and have absorbed heavier amounts of pulp than for some time. Indications are that many mills have succeeded in moving a considerable portion of their surplus stock, and the probabilities are once excess supplies have been taken out of the market, prices will undergo advancement. There has been less selling pressure exerted on foreign pulps and the tone of this end of the market is firmer. Importers seem less willing to dispose of their dock stocks at the low figures which have been recently quoted, and many of them have marked up their asking price, probably figuring that there is nothing to justify their selling available supplies at prices way below the cost of replacement. Domestic bleached sul-

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WATERPROOF WRAPPERS**

The latter especially useful for Export and Express Parcels

Also Paper for Case Lining Plain and Waterproof

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plite is quotable all the way from 5 to 6 cents per pound. Several mills producing an extra strong pulp are asking 6 cents, while sales of No. 1 bleached have been recorded in other quarters at 5.50 cents and of No. 2 sulphite at 5 cents f.o.b. pulp plant. Newsprint sulphite is selling at around \$65 per ton at the pulp mill and domestic easy bleaching at \$85 to \$90. Kraft of standard No. 1 quality is held at \$80 to \$85, although southern kraft is available at lower prices.

Rags. The principal feature of the rag market this week has been the improved inquiry for roofing material. Felt manufacturers have evinced more interest, and the firmer position of low-grade stock has caused the better qualities of rags to strengthen in sympathy. No appreciable change in prices has occurred, but the situation is marked by a steadier undertone, and holders of stock have been far more insistent on the prices asked. The market in the Middle West is very much firmer than in this section of the country. This probably is due to the fact that there are fewer dealers and packers in the West, and with less competition to combat, owners of rags there are better able to hold for the prices wanted. White rags are selling locally at a basis of between 5.25 and 5.50 cents per pound for No. 1 repacked stock. Paper mills are absorbing only slight amounts of these rags, for most grades of whites go into high quality paper, and manufacturers are not producing normal tonnages of fine papers. Thirds and blues are sought in comparatively good volume, but it is noticeable that the bulk of buying is being done by consumers other than paper-makers. Prices range around 3 cents f.o.b. New York for repacked blues. Stockings are in little demand

and are available at 2.75 cents at the shipping point, while cotton quilts, batting and gauzies are quiet. Roofing rags in New York are quotable at about 1.70 cents f.o.b. for No. 1 packing, and 1.50 cents for No. 2 material. There is a wider difference in prices on the two grades than usually exists owing to the relative scarcity of No. 1 rags.

Old Papers. Little business of an important scope is current in the paper stock market. Low grades, which have recently moved in fairly large volume, are now almost equally as dull as the high qualities, and dealers and packers openly complain of the difficulty in securing orders from mills. Prices have shown steady decline throughout the week. The truth of the matter is that production, despite most concerns reducing their output, is in excess of the demand, and waste paper is a commodity which rapidly drops in price once the movement into consuming channels is interrupted. Shavings of all kinds are practically unsalable for the moment. Mills evince little or no interest in either hard or soft whites, while colored shavings are virtually a drug on the market. Prices are nominally around 4 cents per pound on No. 1 hard white, 2.75 cents on No. 1 soft white and \$1 per hundred on colored shavings.

Bagging and Rope.—Occasional sales of a carload or two of No. 1 scrap bagging are being made at prices ranging from 2.00 to 2.12½¢ per pound, delivered mills, with the market as a whole exhibiting very little life. Old manila rope is firmly quoted at 4.25 to 4.50 cents f.o.b. New York. Mixed strings are moving with greater freedom at an average price of about 1.65 cents a pound.



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OF CANADA

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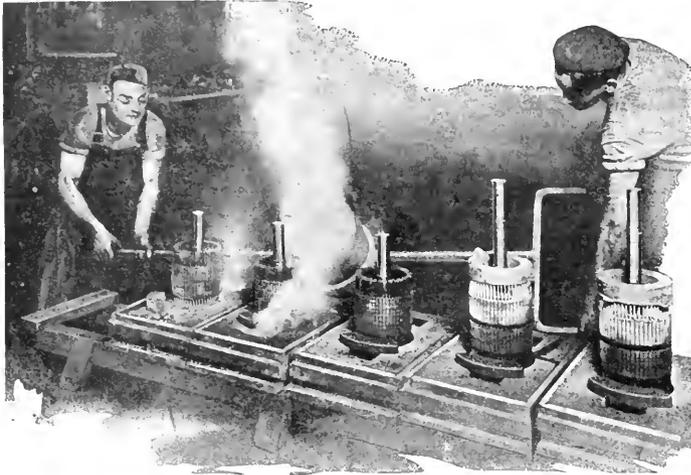
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EDITORIAL

THE ADVISORY COMMITTEE'S ADVICE.

In 1916, the Technical Section of the Canadian Pulp and Paper Association, realizing the intimate relations that must exist between the Forest Products Laboratories in Montreal and the industry appointed a special advisory committee whose duties would be to cooperate with and assist the laboratories. The work of the committee has been of such a nature that little has been heard of its activities. Nevertheless this work has gone quietly on and the services of the committee have already been of considerable assistance to the staff.

The Forest Products Laboratories have now reached a critical point in their existence and it seems that the opportunity for maximum service has come to the advisory committee, provided the Forestry Branch is prepared and willing to accept and make use of its good offices. The institution on University street has for some time past served as a training school for researchers for the paper industry of Canada instead of being the goal of their ambitions. A position at the laboratories should be a coveted one to which men should aspire and not simply a stepping-stone from which to enter what are now the more attractive and lucrative positions in industrial work.

There was a time in the infancy of the research idea in Canada when the Forest Products Laboratories offered about the only opportunity for men desiring to take up a life of investigation work in the problems relating to the utilization of forest products. Industrial leaders, however, have been gradually awakened to the necessity for carrying out researches on their own problems and by competent staff in their own organization. This has put a considerable strain on the available supply of properly trained men and those who have given satisfaction and produced results have been naturally the first to be absorbed as positions have become available in the mills of the Dominion. The industrial concern is thoroughly aware of the dollars and cents standard for measuring service and satisfaction and managers do not hesitate to pay a man what he is worth measured in terms of the service that he is expected to render. It is logical then to suppose that a man is worth as much to the Dominion of Canada as he is to any individual concern and it can therefore be reasonably supposed that a man should be paid what his services are worth.

Government institutions do not seem to proceed on this basis and the Forestry Branch is not an ex-

ception in this regard, for we find a communication in the Journal of the Engineering Institute of Canada protesting against the fact that clerks and stenographers who are ready to take their positions on leaving high school or perhaps without even that much education received a salary equal to, if not greater than, what is offered a graduate from an engineering institute. The work of the Forest Products Laboratories is important work and to carry it on effectively requires a well paid staff. In order to make the work efficient the staff should be as permanent as possible, which cannot be the case when a man knows he is able almost at any time to find a position in industrial life that will add from 25% to 50% of his salary. We are aware, of course, that pensions and other features of the Government position must be taken into consideration, but there should be some provision for putting such work as we are discussing on a basis equivalent to similar work in the industrial world and to pay what it is worth. A research man cannot do satisfactory work unless he is satisfied and is relieved of giving much attention to matters other than the problems in hand and unless a man has a comfortable salary and one that he knows is appropriate to his position one can hardly expect him to be really contented.

Superintendents of the Laboratories have not remained more than three or four years, and the same is true of the other positions in this institution. Fifteen months ago the present exodus started when O. F. Bryant resigned as chief of the Pulp and Paper Division to become superintendent for Bennett, Ltd. The beginning of this year W. B. Campbell, then assistant superintendent of the laboratories left to become vice-president of Process Engineers. H. N. Lee for four years chief of the division of timber physics resigned last year to take up war work in the United States, and E. K. Mansfield accepted a position with a large paper concern in Brooklyn. The next to leave was Dr. John S. Bates, who has been superintendent of the Laboratories since 1914 and who is now with Price Bros. & Co. The last departure that we have heard of is R. W. Hovey, who leaves the position of chief of the Pulp and Paper Division to take up research work for the Abitibi Power and Paper Co. The primary reason for these changes can in each case safely be said to be the question of salary. No intelligent man expects to be paid more than he is worth, but when an intelligent man is fully aware

that his services are worth considerably more to someone else than his present employer has even the inclination to pay he is quite likely to change employers. One trouble with many government positions is that the public does not put a sufficiently high value on the service that is expected and that should be given. There is an old adage which says, "What we get for nothing is generally worth it," and it is quite as true to say that if we want satisfactory service we must ourselves set a sufficiently high value on what we want. Canada needs a \$5,000.00 service in the direction of the Forest Products Laboratories. There is no more important natural resource than the trees of the Dominion and we venture to say there is none that will pay more handsomely for investigations into the proper exploitation and use of the forest and its products. \$5,000.00 may not be the full value and probably is not the full value of the services of a first class man as superintendent of this important work, but such a salary would at least indicate the importance that is attached to the position and give assurance of reasonable permanence in the appointment of a first class man.

The advisory committee for the Forest Products Laboratories has given a great deal of thought to this matter and has recommended the names of four men who have shown marked ability and who have had intimate acquaintance with the problems of the work of the laboratories and who have had the experience that should give them a broad vision of the possibilities for service as superintendent of the laboratories. It is earnestly and confidently hoped that the officials having in hand the appointment of the new superintendent will be guided by the advice of this committee, and select the best man available.

REGARDING COMBINATIONS.

A clergyman in Winnipeg has made the assertion that the Canadian Press Association is a combine, and we find the editor of the Manitoba Free Press taking issue with Rev. Ivens in the matter. The Free Press states that there is nothing whatever in the way of a combine, but that the Press Association is the most democratic body imaginable, where any newspaper that can pay its dues may be a member and where each member has one vote.

A different kind of combination is touched upon by the Financial Post of Toronto in an editorial note which states: "The book paper manufacturers of the United States and Canada, who last year strengthened their position very materially by coming to a closer understanding and adopting similar terms and prices, are now considering similar relations with the paper manufacturers of Great Britain. The ultimate object is the division of territory, standard terms, and finally the elimination of competition, which was quite keen at times during the war and for many years before.

Should the scheme be carried out, as it is likely to be, it will ensure not only sure but very generous dividends."

It would be interesting to know where the Post got any such ideas as this as we are reliably informed that there is absolutely nothing to it. In some industries in England there have been certain amalgamations intended to insure the operators against the suicidal competition which existed before the war and which apparently was instigated by certain European producers. This was particularly the case with the clay industry, where the producers were cutting each others throats instead of competing intelligently with their German rivals. Similar action might be conceived as possible among the paper makers of Great Britain. It cannot, however, be conceived even remotely possible as between the paper-makers of Canada and those of any other country. If the writer of the Post editorial were to ascertain the feeling of Canadian producers of book and higher grade papers toward the manufacturers of similar grades in the United States and England his remarks would have had a very different tone.

AS IT LOOKS TO US.

Another hearing has come and gone and yet the newsprint question is unsettled. Last week Mr. Pringle, the Canadian Paper Controller, heard further evidence on the subject of cost of manufacturing newsprint paper. It will be recalled that the publishers were not satisfied with the judgment of the court and obtained a reopening of the case for the presentation of evidence which they hoped would support their contention that the cost of paper should be based on the actual cost of the materials that were actually used in its manufacture. The particular bone of contention was the cost of the wood, and it was even advocated that a mill should take pains to pick out the cheapest sticks in its wood pile and convert them first into paper so that the publishers could immediately have the advantage of any reduction in price that might be so effected.

The evidence presented at Ottawa last week seemed to have disturbed if not actually upset the theories of the publishers in regard to these price reductions, especially relating to the use of wood. A number of eminent men in the accounting profession were called as witnesses, and their testimony, which was even agreed to by Mr. Clarkson, was not at all in line with what the publishers had apparently hoped would be brought forward. The evidence seems to support the time honored business custom which every cross-roads storekeeper has the intelligence to apply, namely, to increase his retail price when the wholesale cost advances. He knows from experience that when wholesale costs decline, public opinion will force him to lower his retail prices and that if he does not advance his price to the consumer when the wholesale price

goes up, the psychological moment is passed and he is likely to be left with high priced goods on which he will not be able to realize a necessary profit.

It is understood that Mr. Pringle will make a statement by the time this magazine is mailed, but it is not expected that he will make any change in the price. It seems that the evidence received is for the enlightenment of the Judicial Tribunal, and will be delivered to them. Whether or not they will require a further oral argument remains for them to decide, but it is hardly likely that a decision can be arrived at before the first of June.

A phase of the hearing which may be misunderstood by the public has to do with the price that the Fort Frances Co., will hereafter charge for its product. According to newspaper reports the readers might get the impression that a change in basic price of newsprint has been made by Controller Pringle. Such is not the case. At the time the basic price of \$69.00 was made consideration was had for the fact that the Fort Frances Co., had to pay a duty on sulphite pulp used in its paper mill. This pulp is brought over the line from the sulphite mill located across the river on

the American side. A customs duty amounting to \$3.15 per ton of newsprint has been paid by the paper mill and with other costs, apparently not sustained by other mills, brought the cost of manufacturing for this plant \$4.00 higher than was considered fair to other mills, and the Fort Frances Co., has been permitted to charge \$73.00 per ton for its product. Now since the company has been refunded 99% of the duty it paid to the Canadian Government, its costs have been reduced by \$3.12, and the company has been ordered to make a corresponding reduction in the rate at which it has billed paper to Canadian newspapers since July 1, 1918, from which date the rebate of duty has been effective. Naturally such extra payments as newspapers have made are to be refunded. Some dissatisfaction was found by certain publishers over the delay of the company in making rebates, but the company could hardly be expected to hand back such moneys until similarly reimbursed by the Government. It can be hoped that this matter is now satisfactorily adjusted and we can also hope for an early settlement of the newsprint difficulty that has kept a large portion of the Canadian public stirred up for the past few years.

Discolored Pulp

W. A. McCUBBIN, Field Laboratory of Plant Pathology, St. Catharines, Ont.

Through the kindly assistance of the Forest Products Laboratories, the Pulp and Paper Magazine has the pleasure of introducing a new contributor, whose article will be found of great interest and value to those who make wood pulp. Although the word done is limited, the indications are important.

During the spring of 1918 attention was called by a local pulp mill to a difficulty they were meeting in producing sulphite pulp of the requisite grade of whiteness from spruce stock which appeared to be of good quality. Since no improvement resulted after changing the process in various ways, the management concluded that the real trouble lay in the stock itself. When the logs were examined it was found that though apparently sound, the sap-wood was somewhat discolored, and this discoloration was either general or in patches, or in streaks running inward from the surface. All sorts of conditions were met with, but in general the dark colored portions were present in the sap-wood from a half inch to an inch in depth. Under the microscope it was readily seen that in all cases the tissue discoloration was associated with very dark fungus filaments. These in themselves were responsible for some of the discoloration, but there was also apparent an additional and very marked browning of the wood tissue in their immediate neighborhood. Here, then, was the source of the trouble.

It might be expected that the effect of the sulphite process would be to bleach out the color from these parts, but an examination of the finished pulp from these logs showed that it had not done so. Apparently the invading fungus has somewhat the effect

that is produced when wood is turned into peat, where the color developed in the woody tissue is so stable that it is unaffected by years of exposure to water, soil minerals or sunlight.

At first glance it is hardly conceivable that such a comparatively thin layer of only partially discolored sap-wood should have such a profound effect on the finished product, since the centre of the log was in all cases perfectly sound and free from the browning. But a little closer consideration shows that this effect is perfectly natural. It must be apparent that the respective amounts of sound and discolored pulp will be proportional to the cross-sectional areas involved. In a log 7" in diameter (which was about the average size used) the total cross-sectional area would be 38.5 square inches. If the discolored area forms a ring 1" deep around the outside, the sound wood within would then have a diameter of 5", or a cross-sectional area of 19.6 square inches, leaving a cross-sectional area of 18.9 square inches for the discolored area. In other words the amount of pulp from the outer discolored portion of such a log is almost equal to that from the inner sound portion.

It may be of further interest to note that the process employed gave a much less complete separation of the fibres in the tissues where the fungus was. Ordinarily by this process the fibres are well separated and distinct in the resulting pulp, but in the pulp made from the affected wood there are to be seen numerous masses of undigested fibres. As these masses in all cases contain fungus filaments, and are more or less browned it seems fair to conclude that the fungus brings about in the tissues certain changes

which render them somewhat resistant to the digestive process. The microscope further revealed in the pulp from fungus-infested tissue immense numbers of fragments of the brown fungus filaments. These are individually very small, but they are numerous enough to have a quite appreciable effect on the general color of the pulp.

It may be concluded from the above that log stock in which the sap-wood is noticeably invaded by fungi and is streaked, flecked or generally discolored in consequence, may be found unsatisfactory for making a pulp of a fine degree of whiteness; that the fungus and the wood browned by it are likely to withstand the sulphite process, and that the fibre separation in such wood is likely to be incomplete.

The Forests of British Columbia

The recently published report of the Commission on Conservation on the forests of British Columbia, by Roland D. Craig, F.E., and H. N. Whitford, Ph.D., is a comprehensive work, well illustrated with maps and photographs. Through the co-operation of the Provincial and Dominion Governments, the timber owners, the Canadian Pacific Railway, and other interests, the authors secured very complete data on which to base the estimates. The province was divided into 66 districts, for which separate estimates of the stand were compiled.

The forest resources of the province are estimated to be approximately 350 billion feet saw-material, with an additional 16 billion feet suitable only for pulp. In addition to the estimate of the stand, the report describes the effects of the climate, soil and topography on the forests, and outlines the various systems of tenure under which the forest resources have been alienated. Interesting chapters are devoted to the description and distribution of the various species of trees and to the injuries done by insects.

The total land area of the province is 355,855 sq. miles, of which approximately 200,000 sq. miles is

incapable of producing forests of commercial value. About 115,000 sq. miles lie above the merchantable timber-line, and on 55,000 sq. miles below the timber-line the soil is either so rocky or wet, or the forests have been so completely destroyed by fire that there is no hope of natural re-establishment of forest conditions for centuries.

Of the remaining 155,855 sq. miles, which is capable of producing forests, only about 28,000 sq. miles less than one-fifth—carries sufficient timber to be classified as statutory timberland. In the interior of the province, there are areas of forest land, aggregating 23,800 sq. miles, which, though not reaching this standard, carry between 1,000 b.f. and 5,000 b.f. per acre, part of which may be utilized. Only very meagre data have been obtained, as yet, as to the area of land which can be used for agricultural purposes. The forest land classification indicates that somewhat over 5,000 sq. miles is grass land, or very open forest, some of which is suitable for cultivation, but the greater proportion is of value only for grazing. In addition, there is, perhaps, from 12,000 to 15,000 sq. miles, cleared or under forest, which is more valuable for agriculture than for forest production. Deducting this potential agricultural land, say 20,000 sq. miles, from the total capable of producing commercial timber, there is 135,855 sq. miles of absolute forest land which should be devoted permanently to forest production.

The timber on about 100,000 sq. miles, or two-thirds of the original forest land, has been totally destroyed by fire, and on over half of the remaining 55,855 sq. miles the timber has been seriously damaged. It is estimated that the province has lost, through forest fires, at least 665 billion feet board measure. As the present total stand of saw material in the whole Dominion probably does not greatly exceed this amount, the seriousness of this loss, due very largely to public carelessness, is apparent.

The following table indicates the composition of the present stand of saw material:

Species.	Coast		Interior.		Total.	
	Million ft. bd. measure.	Per cent.	Million ft. bd. measure.	Per Cent.	Million ft. bd. measure.	Per cent.
West. red cedar	59,000	27.4	18,019	13.2	77,019	22.1
Douglas fir	64,000	29.4	12,573	9.2	76,573	21.8
Spruce (1)	14,000	6.7	58,375	42.8	72,375	20.6
West. hemlock	52,000	24.6	12,164	8.9	64,164	18.3
Balsam (2)	19,000	9.2	13,838	10.2	32,838	9.5
Lodgepole pine	20	.1	12,130	8.9	12,150	3.5
West. yellow pine	.....	...	4,208	3.1	4,208	1.2
Yellow cypress	3,700	1.9	.....	...	3,700	1.1
Western larch	.....	...	3,152	2.3	3,152	.9
White pine	1,100	.5	1,617	1.2	2,717	.8
Black cottonwood	400	.2	272	.2	672	.2
	213,220	100.0	136,348	100.0	349,568	100.0

(1) Includes Sitka spruce, Engelmann spruce, white spruce and black spruce.
 (2) Includes alpine fir, lowland fir and amabilis fir.

Of the species used in the manufacture of pulp and paper (hemlock, balsam, spruce and cottonwood) there is 170 billion feet, which is equivalent to 243 million cords of pulpwood. This may be increased to 250 million cords by utilizing smaller timber. As the supply of pulpwood is becoming a very serious matter in eastern North America, it is important to know that so considerable a supply may be obtained in British Columbia.

The province has averaged only 1.250 million board feet. With a stand of 350,000 million board ft. of timber of commercial size, and with other 100,000 sq. miles of land on which young forests are established and which, if protected, should produce from 5,000 million to 7,000 million board ft. per annum, it will be seen that the forest resources of British Columbia can, under conservative exploitation, supply at least five times the present cut without seriously depleting the capital

Probe Evidence Goes to Judges

Up to Monday this week at Ottawa the opinion was that the Controller would give a judgment on the whole matter at Ottawa either on Wednesday or Thursday of this week. This, in addition to the "ruling" given by the Controller on Saturday morning to the effect that the Fort Frances Company should reimburse western Canadian newspapers to the extent of \$3.12 per ton retroactive to July 1 were the most important items of interest. The whole investigation, which began on Thursday afternoon and lasted day and night until Saturday afternoon was largely based on the technical inquiry into detailed costs.

After the Controller has given his judgment, the whole newspaper case will then be before the Judges of the Paper Control Tribunal in appeal.

The two day and night sessions fairly reeked with bewildering sets of figures. Several witnesses from Price, Waterhouse and Company gave evidence as well as Col. Montgomery, formerly connected with the War Mission at Washington. In addition there was much expert evidence as to the value of raw material, and its relation as to the cost of the finished product.

When the inquiry opened at the Court House last Thursday afternoon at 2 p.m., the usual roll call of counsel was taken as representing the various interest involved. It was virtually the same as that which appeared before the Controller at the previous session. News interest in the afternoon session began when the costs of the Fort Frances mill came under consideration. The Controller, after some time had been spent, quoted costs for Fort Frances back to early in 1917 on the "average" principle. Mr. W. N. Tilley immediately protested on the ground that the matter before the inquiry at the present time had nothing to do with 1917. He went on to refer to what Mr. Pringle's order setting the \$69 price in September last had been based on the costs of the first six months of 1918, plus eight dollars per ton.

The Controller came right back with an explanation, telling Mr. Tilley that when he made the order last September he had taken into consideration every thing that had preceded. All of his orders, he said, had been interim orders, and as such were subject to revision. One of these orders fixed a price of fifty dollars per ton.

The Controller drew Mr. Tilley's attention to the fact that price fixing was a war measure, and that it could be looked at as such in a "broad way." Mr. Tilley, in reply, said "We (publishers) do not want a miscarriage of justice through throwing in costs which have never been checked up."

The Controller went on to explain that all the costs and all the information about the inquiry had been furnished to the newspaper publishers.

The Controller repeated that both sides had had all the evidence. Mr. Tilley maintained that there was no evidence for the reason that there had been no investigation into the early figures. Mr. Montgomery said this was because Mr. Tilley and the newspapers had absented themselves from the investigation.

Later on during the Thursday hearing Mr. Montgomery placed Mr. F. G. Daniels, general manager

of the Dominion Textile Company, on the stand, for purpose of showing the entering into cost of raw materials, as in their relation to the cost of manufacture. The reflex was the principle or practice used, in the use of cotton as compared with "wood" costs. Mr. Montgomery inquired as to the relation or fixation of the cost of raw materials.

Mr. Daniels said: The value placed upon raw materials was (as in reference to his experience) their current market or replacement value. As an instance he told of yarn prices which he said "rose and fell practically in unison with those of raw cotton."

Mr. Tilley further, in his examination, went into the rise and fall of price, wanting to know if he price of the manufactured article always came down as soon as the market for raw cotton. Mr. Daniels said it might not necessarily happen immediately, but that there might be minor fluctuations.

Fort Frances again to the Fore.

Further on Mr. Phillips made the statement that the Fort Frances Company had since the beginning of 1919 been selling its paper in the United States at a price of \$78 per ton, and has contracts lasting to the end of the year.

The question of the diversion of power was gone into, and Mr. Phillips put Mr. O. Zoellner, engineer for the Fort Frances company on the stand, to show that last year an average of slightly more than 4,000 H.P. was retained for use in Canada. An agreement between Fort Frances and the Crown was produced by Mr. Phillips, providing that 4,000 H.P. should be retained on the Canadian side.

Counsel for the newspapers contended that there were other statutes that provided that there should be an equal or fifty-fifty division, with a surplus of 1,000 H.P. being kept on the Canadian side. Mr. Phillips admitted that there was more than half of the power being sent to the United States.

Further on the Controller remarked that according to the figures of Mr. Clarkson that Fort Frances had made a profit of \$15.61 per ton during the July-November period, without allowing for cost deductions which the publishers claim they are entitled to. The average profit for Fort Frances from March, 1917, to November, 1918, was given to be \$8.72 per ton.

A night session was held Thursday night.

On resuming Friday morning, Mr. Dahlberg, continuing on the question of the diversion of power, said that in 1917 the Canadian Government, fearing a repetition of the flood of 1916, had ordered the flood gates opened. Instead of 1917 being a flood season, it had been a dry season, and consequently a diminishing of water power.

Not An Ally.

Mr. Edward Beck, a well known newspaperman, and now publicity agent for the Pulp and Paper Association, was called to the witness stand by Mr. Phillips, to tell of his going to Fort Frances in April, 1917, to see the wastage of water owing to the flood gates being kept open by the Government's order. He testified that he had seen the gates open and water going to waste. When cross-examined by Mr. Tilley, he said that he was not at present connected with the Fort Frances Company. "Or with allied interests?" asked Mr. Tilley. "Not so far as I know with allied

interests," replied Mr. Beck, who further went on to explain that Fort Frances was not a member of the Association which employed him.

Mr. W. D. Taylor, Mr. Clarkson's assistant auditor, followed, and was examined by Mr. A. J. Thompson, assisting Mr. Tilley. During the course of his evidence he said that if the power developed on the Canadian side had been divided on an equal or "fifty-fifty" basis it would have manufactured one thousand more tons of groundwood than that required by Fort Frances from July to November inclusive in 1918. The purpose of this evidence was to show that if the groundwood had been manufactured through the power which was diverted it would not have added to or swelled the high cost of purchased groundwood.

The Principle of Price Fixing.

The principles of price fixation were taken up. Mr. George H. Montgomery, K.C., placed Col. H. H. Montgomery on the stand as an expert witness. George H. Montgomery wanted to know of Col. Montgomery what general principles had been adopted as regarding the cost of raw material that went into the manufacture of a given commodity. Mr. Tilley immediately objected, claiming that the newsprint inquiry was not concerned with what had been done in price fixing by anybody else. After some argument, Mr. Pringle said, "I think I ought to hear the principles on which the United States fixed prices."

Col. Montgomery said that as far as possible it had been the practice to take in the raw material going into the products at current market prices, unless in the opinion of the price fixers there had been a manipulation or stimulation of the market, which did not justify such a course. Col. Montgomery was later asked if there were manufacturers who had an accumulation of stocks purchased or produced at less than current rates. "Some at less; some at more," replied witness.

To establish a possible equitable basis they had to disregard old costs and apply current costs. In the case of the largest steel producer in the United States, their actual costs were only a fraction of the ruling market. This steel producer owned practically all the sources of raw material, and his book costs were only a fraction of the market price. Some other steel producers had to buy their raw material and the price fixers had to fix a fair price for all.

Witness was asked if he had dealt with price fixation where wood was concerned. Newsprint was not among the products under his control, but in the case of acetate of lime he had allowed current costs for wood. "We were not guaranteeing that we would take their (manufacturers') products for a specified time, and as we were not going to reimburse them in the future for the present high costs, we felt it would be unjust not to take in the wood at current market prices," said Col. Montgomery.

In copper, for instance, when fixing a price of 26 cents per pound the method was to get a report on each mine found to be above 24 cents in cost of production, and as most of these turned out to be producing at a loss even before the war, and as 26 cents gave a profit to the majority of the mines, that figure was fixed.

The rule was to give the companies as much profit as they had made in profitable periods before the

war, but at the end of 1918 costs had increased so that original profits under price fixation were of course reduced.

"Quibbling figures," was the term applied by Mr. P. A. Sabbaton, assistant manager of the Laurentide mills, to the deductions asked by the newspapers, when he was later called to the stand. The charge of \$106,000 charged into a period of twelve months for river and stream improvements was gone into by Mr. Tilley. Mr. Sabbaton explained the yearly increasing charges, and attributed them to bigger drives, and the higher cost of labor and food. He asserted that newsprint costs got the benefit of cheaper production when such materials as groundwood and sulphite are manufactured in larger quantities than are required for newsprint, and the surplus sold or otherwise used. Mr. K. S. Coleman, of the St. Maurice mill, later gave evidence corroborating Mr. Sabbaton on this point.

During the evidence of Mr. Sabbaton considerable amusement was caused in court when he told of the days when "wasteful methods" used to prevail at the mills before "screenings" etc., was utilized. He cited one instance where so many knots had been dumped into a river that they were now being recovered, and utilized in the manufacture of paper. This caused Mr. Tilley to remark, "and sold to us at \$69 a ton."

The Fort Frances Tariff Drawback.

On Saturday morning the chief matter of interest was that of the "ruling" of the Controller regarding the distribution of the "drawback" on the Fort Frances mill, whereby the price for Fort Frances was reduced from \$73 per ton to \$69.88, a reduction of \$3.12 per ton, as provided for when the extra margin was allowed over the \$69 set for other Canadian mills.

The first ruling of the Controller was for a reduction of \$3.15 per ton, but through Mr. Phillips' pleading for the three cents involved on the one per cent of the duty not rebated, the figure was brought down to \$3.12.

GOOD TIMES AT IROQUOIS FALLS.

One of the important social events on the calendar for the Abitibi people is the Paper Makers' Ball on Easter Monday night. The event this year was especially delightful, and the attendance was so large that the stage had to be removed from the hall. A pleasing feature of the ball was the prize waltz, which was won by Miss Maud Scherman and Mr. Harry Buncke, who has but lately returned from service with the American military forces.

To show the ingenuity of the paper makers in getting up something interesting in the way of a program we give the names of the waltzes, one-steps and fox-trots which were applied to these dances by the paper makers. When the pulp makers have their chance we expect to see an equally interesting set of musical selections. These are the names the paper makers picked out:

Dance Program.

Felt Mark; Put on Wire; Wash Felts; Lumps Running; Water Drops; Around the Dryers; Nothing "to Itt"; Another Skip; Sew Wire; Dandy Mark.

Throwing Hay—Refreshments.

Spot on Wire; Belt Breaking; I Would Have Got it Over If; Soft Edge; Slitters Jumped; Too Much Moisture; Last One Stuff Gate; Change Slitters; The 12 to 8; Shut Her Down.

Census of Pulp and Paper Industry, 1917

(Continued from last issue.)

RAW MATERIALS.

Raw Materials Used in the Manufacture of Wood-Pulp.

Tables III, IV, V, and VI, deal exclusively with the wood used in pulp manufacture, forming the principal or primary raw material. Table VIII treats of those of a secondary nature which are used with wood in the manufacture of chemical pulp.

Table III.—Pulpwood by provinces—1916 and 1917 (omitted).

The consumption of pulp-wood in all mills making pulp, whether purchased or cut from own limits, was 2,104,334 cords of the value of \$18,817,483 in 1917 as compared with 1,764,912 cords valued at \$13,104,458 in 1916 and 1,405,836 cords valued at \$9,426,217 in 1915, or an increase of 688,498 cords, or nearly 49.7 per cent., in the two year period. The average price per cord was \$6.71 in 1915, \$7.42 in 1916, and \$8.94 in 1917, an increase of \$2.23 per cord or nearly 33.2 per cent. in the two years.

The order of importance of the five provinces re-

Table IV.—Pulpwood by Kinds of wood—1916 and 1917.

Kinds of wood	No. of firms reporting	Quantity.		Percent distribution.	Total value.	Aver. value per cord.	
		1916.	1917			1916	1917
		No. Cords.	Cords.			\$ et.	\$ et.
Total	73	1,764,912	2,104,334	100.0	18,817,483	7.42	8.94
Spruce	41	1,203,557	1,678,656	79.7	14,711,131	7.66	8.76
Balsam Fir	18	433,154	309,515	14.7	3,040,396	7.31	9.82
Hemlock	7	82,307	101,321	4.8	950,175	5.88	9.73
Tamarack	1	-	5,786	0.3	39,132	-	6.76
Poplar	4	6,177	5,168	0.2	43,647	6.76	8.54
Pine	1	39,717	2,850	0.1	25,650	4.84	9.00
Cedar	1	-	1,038	*	7,352	-	7.08

*Less than one-tenth of one per cent.

Table VI.—Materials used—Pulpwood Consumption by Kinds of Wood and Classes of Mills, whether purchased or cut from own limits.

Kinds of wood by provinces	Pulp Mills Moulin à pulpe				Pulp and Paper Mills Moulin à pulpe et à papier				All mills making wood-pulp Tous moulin faisant la pulpe de bois			
	Purchased Acheté		From own limits Coupé sur "limites" appartenantes		Purchased Acheté		From own limits Coupé sur "limites" appartenantes		Purchased Acheté		From own limits Coupé sur "limites" appartenantes	
	Quantity cords	Value	Quantity cords	Value	Quantity cords	Value	Quantity cords	Value	Quantity cords	Value	Quantity cords	Value
	Quantité cordes	Valeur	Quantité cordes	Valeur	Quantité cordes	Valeur	Quantité cordes	Valeur	Quantité cordes	Valeur	Quantité cordes	Valeur
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
British Columbia	11,995	76,801	33,590	230,940	31,551	176,048	37,688	684,974	43,638	232,849	91,278	715,914
Spruce	11,143	71,761	19,354	130,810	7,179	49,215	29,347	245,581	18,324	119,476	48,601	370,400
Hemlock	840	5,040	14,236	100,121	21,223	109,308	24,403	306,732	22,963	114,349	38,689	309,853
Poplar	-	-	-	-	363	1,702	-	-	363	1,702	-	-
Tamarack	-	-	-	-	1,748	9,471	4,038	29,661	1,748	9,471	4,038	29,661
Cedar	-	-	-	-	1,038	7,352	-	-	1,038	7,352	-	-
New Brunswick	22,188	232,428	73,398	501,654	-	-	-	-	32,188	232,128	-73,398	501,654
Spruce	27,684	199,414	58,277	369,411	-	-	-	-	27,684	199,404	58,277	399,411
Balsam Fir	2,488	18,162	15,051	101,132	-	-	-	-	2,488	18,162	15,051	101,132
Hemlock	2,036	14,862	70	511	-	-	-	-	2,036	14,862	70	511
Nova Scotia	17,124	122,451	1,350	11,000	-	-	-	-	17,124	122,451	1,350	11,000
Spruce	16,260	117,513	1,250	11,000	-	-	-	-	16,260	117,183	-	11,000
Balsam Fir	334	1,578	-	-	-	-	-	-	334	1,578	-	-
Hemlock	530	3,969	-	-	-	-	-	-	530	3,969	-	-
Poplar	10	60	-	-	-	-	-	-	10	60	-	-
Ontario	56,218	731,686	119,550	1,120,720	126,955	1,621,927	402,668	3,903,012	180,172	2,356,823	552,518	5,673,732
Spruce	52,112	695,036	132,840	1,017,630	119,690	1,505,649	354,834	3,232,362	171,502	2,200,683	487,474	4,249,892
Balsam Fir	11,167	42,736	-	-	2,255	85,100	31,567	317,947	4,430	65,836	31,567	377,947
Hemlock	-	-	17,010	153,090	2,895	51,271	10,527	292,703	2,895	51,271	33,537	445,493
Poplar	89	1,274	-	-	1,117	11,907	-	-	1,206	13,151	-	-
Jack Pine	2,839	25,650	-	-	-	-	-	-	2,850	25,650	-	-
Quebec	16,245	370,684	417,341	2,578,378	217,037	2,314,900	429,243	4,358,070	263,282	2,584,381	846,587	6,866,448
Spruce	36,576	319,036	389,471	2,379,944	133,157	1,350,067	289,800	2,987,403	169,433	1,669,103	6,9,271	5,307,347
Balsam Fir	9,669	51,048	27,873	1,198,434	79,679	832,482	138,474	1,393,777	89,348	883,330	106,347	1,502,211
Hemlock	-	-	-	-	1,281	8,437	41,230	301,533	1,281	8,437	300	2,160
Poplar	-	-	-	-	2,920	23,914	660	4,750	2,920	23,914	660	4,750
Canada	63,760	1,536,460	675,432	4,402,092	375,543	4,012,875	898,599	8,776,056	539,303	5,549,335	1,565,031	13,268,118
Spruce	143,757	1,403,050	601,192	3,935,504	260,026	2,903,931	673,681	6,465,246	403,783	4,306,581	1,274,873	10,404,150
Balsam Fir	13,675	83,524	42,924	299,566	82,932	885,382	169,981	1,771,724	96,610	909,106	212,905	2,011,290
Hemlock	3,376	22,902	31,316	253,722	25,399	169,016	41,230	301,533	28,772	191,518	75,646	735,357
Poplar	99	1,334	-	-	4,400	37,523	669	4,750	4,459	38,807	669	4,750
Jack Pine	2,850	25,650	-	-	-	-	-	-	2,850	25,650	-	-
Tamarack	-	-	-	-	1,748	9,471	4,038	29,661	1,748	9,471	4,038	29,661
Cedar	-	-	-	-	1,038	7,352	-	-	1,038	7,352	-	-

Table V.—Pulpwood by processes 1916 and 1917.

Processes.	No. of firms reporting.	Quantity		Percent distribution.	Total value.	Aver. value per cord.		
		1917	1916			1917	1916	1917
		Cords.				P.C.		\$	$ et.	$ et.
Total	78	1,764,912	2,104,334	100.0	18,817,483	7.42	8.94	
Mechanical	42	827,258	964,479	45.8	7,787,455	7.63	8.07	
Sulphate	25	727,945	855,489	40.7	8,708,317	7.57	10.18	
Sulphite	8	201,954	274,646	13.0	2,223,802	6.05	8.10	
Soda	3	7,755	9,720	0.5	97,909	7.32	10.07	

Table VII.—Average number of pounds of Pulp produced per cord of Wood, by Classes of Mills, 1917.

Kinds of pulp by processes.	British Columbia.						New Brunswick.		Nova Scotia.		Ontario.		Quebec.		Canada.					
	Pulp mills—		Soda process		Sulphate process		Sulphite process		Mechanical process		All mills making pulp—		Soda process		Sulphate process		Sulphite process		Mechanical process	
Soda process
Sulphate process
Sulphite process
Mechanical process
All mills making pulp—
Soda process
Sulphate process
Sulphite process
Mechanical process

maintained the same as in 1916, Quebec leading with 1,109,869 cords or over half the total. Ontario was second with 735,691 cords or over a third of the total. British Columbia was third with 134,814 cords, New Brunswick fourth with 105,586 cords, and Nova Scotia last with 18,374 cords. The quantity of pulp-wood consumed in each province is an increase in every case as is the average value per cord of wood.

Spruce continues to lead all classes of wood, being 79.7 per cent. of the total in 1917, balsam fir and hemlock being next in order of importance. These three woods all show increases from 1916. Poplar and pine show decreases from the preceding year and tamarack and cedar are reported from British Columbia for the first time in several years.

The greatest proportion of the wood used still goes into the manufacture of ground wood-pulp although the three chemical processes are making heavier demands on the wood supply each year. In 1915, 52.9 per cent. of the wood was used in making ground wood-pulp. In 1916 this proportion decreased to 46.9 per cent. and a further decrease to 45.8 per cent. is recorded for 1917. The increase in the proportion of wood used for the manufacture of chemical pulp does not represent an equal increase in the production of pulp by these methods. Table VII, which gives the average number of pounds of pulp produced per cord of wood by each process, shows the relatively large quantity of wood used by the chemical processes. Where over a ton of pulp per cord of wood is produced on the average by the mechanical process, only 1,105 pounds are produced by the sulphate process, 1,063 by the sulphite process, and only 930 pounds by the soda process.

The mechanical process does not demand the use of the most expensive grades of wood, and the average value, \$8.07 per cord, is therefore the lowest on the

list. Certain species such as jack pine which cannot be used to advantage in other processes are useful in making kraft pulp and the average value of wood used in the sulphate process, \$8.10 per cord, is also low. The best quality of pulp-wood went into the manufacture of sulphite at \$10.18, and soda pulp at \$10.07 per cord.

Table VII shows the average number of pounds of pulp produced per cord of wood by each of the processes. For the mechanical process the highest average was 2,305 in British Columbia and the lowest 1,818 in Nova Scotia, the average for the Dominion being 2,043 pounds per cord. By the sulphite process the highest average 1,137 pounds is again found in British Columbia, and lowest 961 pounds in Ontario, the average for the Dominion being 1,063 pounds. The sulphate process shows highest in Ontario with 1,176 pounds and lowest in Quebec with 1,063 pounds, the average for the Dominion being 1,105 pounds. The soda process shows the lowest production, viz., 930 pounds per cord.

Other materials used in the manufacture of wood-pulp are given in Table VIII, and the value represents the cost of the different classes as laid down at the mill. Nova Scotia, producing groundwood or mechanical pulp only, does not appear in this table.

Materials used in the Manufacture of Paper.—The materials used in the manufacture of paper are shown in Table IX. The quantity and value of pulp used, whether produced or purchased, includes groundwood, 617,029 tons with a cost valuation of \$9,984,597; sulphite fibre, 239,129 tons valued at \$10,613,617; sulphate fibre 28,822 tons valued at \$1,773,029; and soda fibre, 6,001 tons of a value of \$448,746. The value of other materials used, such as rags, old or waste paper, alum, etc., was \$5,797,445. The total cost of all materials used was \$28,617,434.

Fuel Consumption.—Table X shows the quantities and values of the different kinds of fuel used in each class of mills. Bituminous coal accounts for nearly 94 per cent. of the total value of all fuel used. There were 988,624 tons used, of which 865,145 were of foreign and 123,479 of domestic origin. Of fuel oil, 7,287,546 gallons of foreign and 1,393,500 gallons of domestic origin were used, the total value being \$235,211.

Table VIII.—Other Materials used in the manufacture of Wood Pulp, by Kinds and Classes of Mills for Provinces, 1917 (abbreviated.)

All Mills Manufacturing Wood pulp.	
Kinds of materials by provinces	
British Columbia—	
Sulphur	5,869 139,983
Sulphate of Soda	245 5,656
Soda ash	104 7,476
Limestone and lime	10,078 40,435
Other misc. materials	500
Totals	194,050
New Brunswick—	
Sulphur	5,585 139,502
Sulphate of soda	1,565 38,815
Soda ash	936 33,136
Limestone and lime	5,634 72,939
Other misc. materials	200,923
Totals	485,315
Nova Scotia—	
Sulphur . . . . .	.....
Sulphate of soda . . . . .	.....
Soda ash . . . . .	.....
Limestone and lime . . . . .	.....
Other misc. materials . . . . .	.....
Totals . . . . .	.....

Table X.—Fuel Consumption for Classes of Mills by Provinces, 1917. (Abbreviated.)

Totals for Canada—	Canadian.		Foreign.	
	Quantity.	Value.	Quantity.	Value.
Bituminous coal, slack, ton	15,560	98,685	292,492	1,999,267
Bituminous coal, lump, ton	17,350	158,968	194,906	792,739
Bituminous coal, run of mine, ton	90,569	625,088	377,747	3,032,458
Anthracite coal, lump, ton . . . . .	.....	.....	964	12,010
Anthracite coal, dust, ton . . . . .	.....	.....	6,826	36,230
Coke, ton . . . . .	.....	.....	30	601
Gasoline, gal.	1,700	570	63,400	18,220
Oil (fuel) gal.	1,393,500	29,517	7,287,546	205,594
Wood, cord	47,906	120,527	.....	.....
Gas, m.e.ft. . . . .	.....	.....	.....	.....
Other fuel . . . . .	.....	12,727	.....	.....

(To be Continued.)

MR. BECKER IS OPTIMISTIC.

The Paper Maker and British Trade Journal prints a recent interview with Becker and Co. Mr. Becker believes the Swedish manufacturers are misrepresenting the wood pulp situations by making statements that would lead papermakers to think there is a shortage of wood-pulp, but says that under normal conditions, with sufficient coal and tonnage Sweden, Norway and Finland could deliver pre-war production, if not more. He also intimates that the Swedes and Norwegians have been deliberately inflating the price of pulp, and that costs mentioned are absurd. Mr. Becker also believes that there is no foundation for the recent statements of invest-

Ontario—		
Sulphur	17,261	439,743
Sulphate of soda	3,955	91,304
Soda ash	1,034	32,630
Limestone and lime	18,430	204,014
Other misc. materials . . . . .	.....	834,521
Totals . . . . .	.....	1,602,212
Quebec—		
Sulphur	19,389	475,942
Sulphate of soda	25,431	300,856
Soda ash	3,643	139,880
Limestone and lime	57,193	195,218
Other misc. materials . . . . .	.....	863,392
Totals . . . . .	.....	1,975,288
Canada—		
Sulphur	48,103	1,195,170
Sulphate of soda	31,196	436,631
Soda ash	5,717	213,122
Limestone and lime	91,335	512,606
Other misc. materials . . . . .	.....	1,899,336
Totals . . . . .	.....	4,256,865

Table IX.—Materials used in the manufacture of Paper by Kinds and Classes of Mills for Canada, 1917 (abbreviated.)

Kinds of materials.	All classes of mills making Paper.	
	Quantity.	Value.
Total for Canada	92,973	28,617,434
Ground wood pulp	29,837	9,984,597
Soda fibre	1,680	448,746
Sulphite fibre	59,893	10,613,617
Sulphate fibre	1,563	1,773,029
All other materials . . . . .	.....	5,797,445

ment of German capital in Swedish mills, because the rate of exchange would make it particularly impossible for the German to buy up interests in Sweden, whereas Swedish financiers can buy in German investments at about half price.

Mr. Becker is most hopeful for the future of the pulp manufacture in Canada, and states that English and French paper makers can rest quite easy while the Scandinavian waterfalls and trees continue to charge so much extra for performing their natural functions, and take such an intelligent interest in the signing of the armistice and the fall of freights as to raise their cost of production 30 kr. per wet ton of mechanical and 60 or 70 kr. per ton of sulphite pulp.

CANADIAN EXPORTS FOR FEBRUARY.

Canadian exports of pulp, paper and pulpwood for February, 1919, amounted in value to \$8,777,227, as against \$1,402,456 for February, 1918, an increase of almost 100 per cent. A large proportion of the increase is accounted for by printing paper, of which 797,708 cwt., valued at \$2,278,166, were exported in February, 1918, as against 1,242,674 cwt., valued at \$1,305,099 in February, 1919. February, 1918, was one of the months to which the \$60-a-ton price for newsprint paper, fixed under the Federal Trade Commission agreement, applied, while the February, 1919, fixed price was \$75.05 a ton, which accounts for some of the increased value.

Exports of chemical pulp were 366,371 cwt., valued at \$1,260,024, in February, 1918, and 491,016 cwt., valued at \$1,916,828 in February, 1919. Groundwood exports fell off \$3,824 in value for the month, 147,030 cwt., valued at \$222,245, being exported in February, 1918, against 164,673 cwt., valued at \$217,421 in February, 1919.

Exports of unmanufactured pulpwood in February, 1919, totalled 145,747 cords, valued at \$1,411,100 as against 36,515 cords in February, 1918, valued at \$359,486, an increase for 1919 of nearly 300 per cent. a significant showing in view of the agitation for a removal of the restrictions against the export of pulpwood cut from Crown lands. The 145,745 cords of pulpwood exported in February, 1919, were capable of producing 97,163 tons of newsprint paper, which, at the export price of \$75 a ton, would have brought into Canada \$7,287,025, instead of the \$1,411,100 received, had the wood been manufactured into paper here and exported in that form.

The detailed figures follow:

Month of February.	1918.	1919.	
Papers and mfrs. of	\$2,560,701	\$5,231,878	
Chemical pulp	1,260,024	1,916,828	
Mechanical pulp	222,245	217,421	
	\$4,042,970	\$7,366,127	
Pulpwood	359,486	1,411,100	
	\$4,402,456	\$8,777,227	
Eleven months, 1917.	1918.	1919.	
Paper and mfrs. of	\$22,381,067	\$32,985,106	\$43,195,197
Chemical pulp	12,266,447	17,223,731	28,184,972
Mech. pulp	5,794,326	5,886,394	4,253,361
	\$40,441,842	\$56,095,231	\$75,633,530
Pulpwood	6,025,886	7,778,758	13,978,457
	\$46,467,728	\$63,873,989	\$89,611,987

INTERNATIONAL MILLS CLOSED BY STRIKE.

Glen Falls, N.Y., May 12.—The situation in the strike of the pulp, sulphite and paper mill workers union and mechanics in the 32 plants of the International Paper Company is unchanged to-night. President Burke, of the union, to-day notified General Manager Allen Curtis, of the company, of the action taken by the men, but no reply has been received. The locals to-day agreed to permit a sufficient number of men to return to work to assist the paper makers in running off stock in the vats so that it would not spoil. This required only a few hours, and the members of the mechanics' organization, em-

makers as well then left the plants. To-night virtually all of the mills had suspended operations completely. In Palmer Falls, Fort Edward and other places the paper makers have voted not to return to work until the demands of the strikers are met.

Five thousand members of the International Brotherhood of Pulp Sulphite and Paper Mill Workers, and the members of the mechanics' organization, employees of the International Paper Company, went on strike Monday.

The company had offered an increase of approximately 10 per cent in wages to take effect today, but this was refused.

The men demanded increases of from eight to ten cents an hour. The company's offer was from four to six cents and an eight hour day. The mechanics demanded 60 cents, and were offered 55 cents.

The strike situation so far as the union is concerned is to be handled by H. W. Sullivan, of Orono, Maine, first vice-president, who took charge of the international headquarters in Fort Edward to-day, when President Burke left with President J. T. Carey, of the International Brotherhood of Paper Makers, for Sault Ste. Marie, to confer with Canadian manufacturers.

Patience Has Ended.

Before starting for Canada, Mr. Burke issued the following statement:

"It is my opinion that this strike is largely physeiological in its nature. The men have gotten into a state of mind in the last year over repeated delays in receiving decisions from the War Labor Board until the breaking point has been reached, and they are simply determined to cease work until some kind of a satisfactory adjustment of the wage question has been effected. I think it is regrettable that at the conference with the company in New York we did not have time to have delegates from the local unions in attendance."

President Burke was opposed to a strike until further conferences could be had with the representatives of the company.

LATEST STRIKE NEWS.

A threatened strike was averted Tuesday by Finch, Pruyn & Co., at Glens Falls, by granting mechanics 60 cents an hour, and other workers a flat increase of five cents an hour. Independent negotiations were conducted between the company and representatives of the men.

The War Labor Board has informed John P. Burke, President of the Pulp, Sulphite and Paper Mill Workers, that the war will not be over till the peace treaty is ratified, and that if the fact that the wage agreements made for the period of war were not honored by organized labor generally, such reasoning as that of the pulp and paper workers would have brought industrial chaos.

NORWAY'S PAPER MILLS CLOSE.

Christiania, May 13.—Norwegian paper mills have stopped working wholly or partially, chiefly owing to the new restrictions on paper imports to England. Hardly any mills have orders in hand. It is said that the British restrictions will be withdrawn, in six or eight months, but long before then all Norwegian paper industries will have to close down.

UNITED STATES NOTES

The price stabilization plan through which the Industrial Board of the Commerce Department was to bring a lower level of prices and to stabilize them at a point which would encourage buying and bring quick industrial and economic adjustment to peace conditions is at an end. Secretary of Commerce Redfield damonounced last Friday that the resignation of Chairman George N. Peek and the full membership of the Industrial Board had been accepted. They had all turned in their resignations on April 22, due to the attitude of Director-General of Railroads Hines, whose determined opposition to the price schedule fixed for steel caused a controversy that divided the President's Cabinet. The President was appealed to in Paris, and at his suggestion another effort to obtain an agreement was made. This was attended with failure, the result being that prices in general have not at all been lowered, but have even shown a decided upward trend.

The first annual convention of the National Paper Box Manufacturers' Association will be held Wednesday and Thursday of this week at the Traymore Hotel, Atlantic City, N.J. It is expected that every firm in the association will be represented.

The newly organized Fort Howard Paper Company has planned the construction of a paper mill at Green Bay, Wisconsin. It is estimated that a total expenditure of \$200,000 will be needed to complete the plant, the machinery and other necessary equipment alone requiring an outlay of \$150,000. Operations will be started with one paper machine. Officers of the Fort Howard Paper Company are: Samuel H. Cady, president; Ludolf M. Hansen, vice-president; Austin E. Cofrin, secretary-treasurer and general manager.

The Union Alliance Corporation, New York City, has just been incorporated with a capital at \$100,000. L. F. Mentz, J. S. Regan, and R. T. Woodruff, of 257 West 92nd street, New York City, are the incorporators. The concern will deal in pulp and paper.

According to a report submitted by the officers of the United States Playing Card Company, the gross earnings of the concern for 1918 were \$1,089,921.83. The net earnings were given as \$944,415.24, after deducting reserves for depreciation on buildings and plant equipment of \$145,506.59. This net is before deducting the 1918 federal taxes. The surplus is given as \$2,226,026.01. Assets are in excess of \$6,474,000, consisting of cash, Liberty Bonds, accounts receivable, finished merchandise, real estate, buildings, equipment and the usual items, less reserves totalling \$2,324,670.

The dye and chemical census of the Bureau of Foreign and Domestic Commerce will be made public soon. The census this year, it is understood, will contain many names and other data which were omitted in the past.

The Paper Pulp Underwriters, Manhattan, New York, capital, \$10,000, was among the recent incorporations at Albany, New York. E. C. Hull, J. Culp and M. T. Harrington are the incorporators.

Papers in a damage suit have been issued against the Monarch Paper Company of Michigan, by the Bryant Paper Company and the Illinois Envelope Company. \$300,000 is asked by the former and \$50,000 by the latter, because of damages alleged to have been sustained when the Monarch mill dam broke on the night of June 23 last, wrecking buildings and machinery. It is charged that the dams of the defendant were old, weak and decayed, and that the gates, sluices, spillways, flumes and flash work were inadequate and stopped up. Due to the negligence of the defendant in so maintaining the dam, the Bryant company and the envelope concern allege that damages approximating the amounts mentioned in the action papers resulted to their respective plants when the waters of the Monarch mill pond inundated them. This suit is said to call for the largest amount of damages sued for in the history of the Kalamazoo Valley paper industry.

The Aniline Dyes and Chemicals, Inc., have opened a western branch office at 227-233 West Huron St., Chicago, in charge of J. B. Jones. The Aniline Dyes and Chemicals, Inc., will carry a stock of dyestuffs and chemicals for the paper, tanning, textile and paint industries at the new branch.

A. W. P. Took Labor Into Confidence.

The American Writing Paper Company has issued its annual report for the year ended December 31, 1918, showing a surplus after charges and war taxes of \$1,252,629, equal to \$10.02 a share earned on the \$12,500,000 preferred stock as compared with a surplus of \$150,287, or \$1.30 a share earned on the preferred in 1917. According to the report the American Writing Paper Company led the paper industry in advancing prices. The concern began in the latter part of March, 1917, it says, "striving to bring prices consistently into line with increasing manufacturing costs. The labor leaders were taken into our confidence, and the situation placed squarely before them. It must in justice be said of them that they showed a rare sagacity and breadth of view in advising their constituents to await a more favorable situation in the industry before pressing their demands. When the advanced prices put into effect July 1 materialized into operating profits a general advance in wages of approximately 20 per cent was granted as of that date. This relieved the tension in the labor situation."

PAPERMAKERS STRIKE AT RUMFORD, ME.

About 200 papermakers employed by the Continental Paper Bag Company, a member of the International Paper Company, went out on strike at two o'clock Saturday afternoon. The men demand an eight-hour day and an increase in wages, which amounts to 15 per cent. They have been working nine hours a day.

P. L. Colbert, manager of the National Paper Co., Valleyfield, Que., spent a few days in Toronto last week on business.

Technical Section

GOING TO KENOGAMI.

Plans for a wonderful trip up the Saguenay and a fine meeting of the Technical Section in July are rounding into shape. As a prominent feature of the program, it has been proposed to hold a round table discussion of the "Requirements and Development of the Laboratory in Pulp and Paper Mill Operation." This is a very timely subject, and should answer the question of many mills as to whether and why they should have a laboratory or make use of the consulting chemical engineer.

The joint meeting at Erie, Buffalo and Niagara district will be most interesting and enjoyable.—Watch for further details.

A new member has been added to the Technical Section, Mr. H. R. Dorken, Dryden Pulp & Paper Company, Ltd., Dryden, Ont.

REVIEW OF RECENT LITERATURE.

B-10. Market for B. C. Douglas Fir in Australia. Western Lumberman, 1919, p. 42. The forests of Australia, reduced by fire, logging and clearing, are not capable of supplying the needs of the population; they are composed almost entirely of hardwoods of the eucalyptus and acacia families. Douglas fir is preferred for building, owing to its light weight and excellent working qualities; this lumber sells for less than the native species. The annual consumption of lumber is around one billion feet, of which one-half is imported. Of the importations in 1914, 50 per cent. came from the United States and only 3 per cent. from Canada. To secure their fair share of the business, Canadian mills must be equipped and maintained to give a dispatch equal to competitive United States mills; there must be adequate organization and cooperation between British Columbia mills, and, in turn, with United States mills, to control the export market, with the object of maintaining a profitable price level, adjusting the grades so that the consumer can get what he can use, and yet will take more of the log.—C. L.

L-0. Where some of the (waste) wood goes. Paper 23 (1919), No. 25, p. 15.—(1) Wood flour made by grinding spruce or hemlock on the end grain, against a revolving grindstone, the wood being kept in a wet condition while grinding. Used with other materials in the manufacture of explosives, linoleum, and phonograph records. (2) Spent tan bark in the manufacture of shingles and roofing felts. (3) Sulphate or kraft paper used in the production of twine, rope, webbing, furniture, reed, basket braid and rugging.

4. Viscose, a wood product used in the manufacture of fibers for wood silk, in greaseproof sausage casings and in protective covering for the contents of candy boxes. In general the wood is first treated by the sulphite process, the pulp is treated with caustic soda resulting in solutions on treatment with carbon bisulphide. The resultant substance is run through dies if strands are desired, or spread into sheets. A hardening solution is applied, after which the viscose is ready for commercial use as silk fiber or protective covering.—E. K. M.

M-4. Paper Driving belts. Anon. Machinery, Vol. xv, No. 6, February, 1919, p. 497.—It is said that paper driving belts have been introduced into Ger-

man workshops. The paper is cut into narrow bands, which are then spun, and the belts are made by weaving or braiding. Woven belts are of two kinds—paper fabric and paper thread—the fabric being more often used. The fabric is first cut into bands about 12 feet long, which are subsequently made into the desired width and thickness. A strengthening core is interposed, made of either cotton or sheet metal, though more recently the cores have been made of interwoven paper thread and metal wires. The core is encased in paper strips and the whole is then sewn with strong thread. These belts are said to be very flexible, and to wear satisfactorily. The tensile strength is from 560 to 700 pounds per inch of width.—J. Franklin hist.

R-1. New French pulp company. Le Papier, 22, No. 1, (Jan., 1919), p. 21.—The Societe des Celluloses de l'Afrique Francaise du Nord has recently been incorporated at Alger, Algeria, with a capital of 3 million francs, for the manufacture of pulp, paper, and allied products.—A. P. C.

R-0. Theory and practice in papermaking. By James Strachan. Paper 23 (1919), No. 25, p. 11-12.—What the practical papermaker has to learn from the chemist and vice versa.—E. K. M.

SODA ASH IN CANADA.

The estimated consumption of soda ash in Canada is now 50,000 tons. During the past four years the lack of soda ash has been felt by a great many Canadian industries which were entirely dependent on foreign supplies. Most of the soda ash used came from England, and, with the war, Canada was practically shut off from supplies. Now, however, Messrs. Brunner, Mond (Canada), Ltd., have their new plant at Amherstburg, Ont., practically completed. The town of Amherstburg is well situated, and the raw products—salt, limestone and ammonia—are easily available. The plant has one of the largest lime kilns known, being 80 ft. high. Taken altogether, it is one of the most complete soda ash plants in the world, and is designed in such a way that the capacity may be readily increased with the demand. The company produce their own power, and obtain their salt from wells practically at the plant. The limestone used is also taken from quarries on the property.—Can. Chem. Jour.

ONTARIO'S FOREST RESOURCES.

It is stated by the Commission of Conservation that Mr. Roland D. Craig, of the forestry staff of the commission, will commence at once a survey of the forest resources of Ontario, especially pulpwoods. Mr. Craig has just returned from British Columbia, where, as chief inspector of the Aeronautical Branch, Imperial Munitions Board, he has had under his supervision the production of spruce for aeroplane construction. Mr. Craig is the author of a report on the forest resources of British Columbia, to be published shortly by the Commission of Conservation.

Horizontal, inclined and long belts give much better effect than vertical and short belts.

PULP AND PAPER NEWS



At the annual meeting of the Canadian Consumers Casein Co., Limited, which was held in Toronto recently, a good year's business was reported for 1918. The following officers were elected for the coming year: W. C. Copping, St. Johns, Que., President and Managing Director; Vice-President, C. N. Ramsay, Toronto; Secretary, F. H. Gage, Toronto; Treasurer, I. H. Weldon, Toronto. The company, which is operated by all the coated paper plants in the Dominion, has been in existence for the past three years, and in that time has worked up a splendid business with Canadian dairies. Before the inception of the Canadian Consumers Casein Co., most of the purchases of this commodity had to be made through U.S. brokers and others, while a great deal of casein was being shipped out of the country. By the formation of the organization a flourishing Canadian industry has been established and the price paid to producers for casein at the present time is double to what it was three years ago.

G. G. Rooker, has been appointed assistant manager of the Canadian Press Association, and has entered upon the duties of his new position. He was for two years advertising manager for the Times-Journal of Port William, and previous to that was the western business representative of the Toronto Globe, with headquarters in Winnipeg. Lieut. Rooker recently returned from service overseas, with the 5th Battalion. He was wounded a couple of times in the leg, and saw severe fighting at Cambrai, Hill 70 and Passchendaele. He was for a considerable time in the hospitals.

The pulp and paper manufacturers along the Old Welland Canal have been notified that the water will be let out on May 23. This will mean that while the waterway is being cleaned out and repaired, the mills in Thorold, Merritton and St. Catharines will also take advantage of the shut-down to overhaul their plants and put them in good shape for the coming season.

At a meeting of the members of the Toronto Board of Health held last week a resolution was unanimously carried that all bakers be requested to wrap their bread and other products of the bakery. Dr. Hastings, Medical Officer of Health, recommended this course some time ago. A conference will be held with the bakers in a few days.

Dr. J. W. Ross, Canadian Trade Commissioner at Shanghai, China, was in Toronto recently, and conferred with a number of paper manufacturers who were making inquiries in regard to trade possibilities in China.

The Toronto Board of Education is getting to be very economical. It was stated that the printing plant at the Technical School would have to be enlarged in order to be able to do all the printing of the Board. The matter was discussed, but when it was learned that \$8,000 would have to be expended for equipment, no action was taken.

Sergt. E. G. R. Clark, who has been with the Canadian Siberian Expeditionary Force, is expected back to Toronto in a few days. He will be warmly welcomed home by his many old friends in the paper trade, with which he has been identified many years.

Richard Brown, head of the firm of Brown Bros., Limited, Toronto, is not enjoying good health at the present time, and is unable to come down to business. Mr. Brown, who passed his 85th milestone this week, has resided in Toronto ever since 1846, and with two of his brothers, established ten years later the house of Brown Bros., which is the largest stationery, account book manufacturing and book binding firm in the Dominion. For over sixty years Mr. Brown has been a leading and respected member of the business community in Toronto, and no man has been more highly esteemed. Until the last few months he has been coming down to his office regularly at least for a portion of the day, but lately has not been feeling well enough to leave his home. For many years he was a director of the Toronto Paper Mfg. Co., and in recent years his place on the board has been taken by his son, T. Albert Brown.

J. J. O'Connor, of the Beauharnois Division of the Howard Smith Paper Mills, and for some years superintendent of the Don Valley Paper Mills, Toronto, was in Toronto recently, and called upon a number of friends in the trade.

W. S. Hodge, of the Hodge-Sherriff Paper Co., Toronto, has gone to England, where he takes charge of the London office of the company, which is located at Cravenhouse, Kingsway, London. For nearly three years this office was managed by W. H. Sherriff, who recently returned to Canada, and will make his headquarters in Toronto. Mr. Sherriff lately returned after a hurried trip to various centres in the west, and is once more on a business visit to the Coast. The firm, who are Canadian selling agents for the Wayagamack Co., report that the demand for kraft paper is active, and that the outlook good.

The Camden Paper Mills, which are located at Camden East, Ont., and have been making manila wrapping for some time, have closed down, temporarily. It is stated that as soon as certain reorganizations in the staff are effected there is a possibility of the industry resuming operations.

The recent heavy rains have delayed sending the fire rangers north, and they will not begin patrol work in Ontario until May 15—two weeks later than usual. The wet season has saved the province about \$40,000 in forest protective work, although it has been hard on farmers and gardeners.

Hon. G. H. Ferguson, Minister of Lands, Forests and Mines for Ontario is on an extended business trip to the North, and is helping to initiate the greatest chain of public works yet undertaken in a single year in New Ontario. Mr. Ferguson is visiting the site of the Kapuskasing paper plant and other industrial sites.

I. H. Weldon, President of the Provincial Paper Mills Co., Toronto, has been spending the past few weeks at Ashville, N.C., has returned home much improved in health.

The Canadian Barking Drum Co., Limited, have opened executive offices in the Royal Bank Building, Toronto, under the management of Mr. B. Branch. Heretofore all Canadian business was taken care of from the parent company's offices, The Fibre Making Processes, Inc., Chicago, but the growth of the Canadian business necessitated the Canadian company. The new company is a distinct organization, but at the same time will have at their disposal the facilities and experience of the large number of installations of barking drums, which have been placed in the various pulp and paper mills of the Continent by the Fibre Making Processes Inc. Mr. Branch has had a wide experience in the manufacture and operation of barking drums, and is already well known to the Canadian industry.

At the annual meeting of Ritchie and Ramsay, Limited, coated paper manufacturers, Toronto, which was held recently, an encouraging report was presented on the operations of the past year. F. A. Ritchie was re-elected President and Managing Director, C. N. Ramsay, Vice-President, and J. M. Finlay, Secretary-Treasurer. George W. Pauline, who has been a director of the company for some time, was appointed assistant general manager, and his many friends in the trade will congratulate him on his well deserved promotion. The plant of the company in New Toronto is busy at present, and the outlook for the coming season is good.

John Martin, of the John Martin Paper Co., Winnipeg, who has been several weeks in the south for the benefit of his health, is expected to spend a few days in Toronto this week on his way home. Mr. Martin is much improved, and hopes in the near future to regain his old time vigor. His many friends will be pleased to welcome him back to the ranks. Mr. Martin is Vice-President of the Canadian Paper Trade Association.

The Beaver Cove Lumber and Pulp Co. at Vancouver, will have their new pulp mill and saw mill at Beaver Cove, P.C., in operation the latter part of June. The saw mill will cut 125M feet in 10 hours, while the pulp mill will turn out 40 tons of heavy or kraft pulp. The company expect that their market for pulp will be divided between the United States and the Orient, and they will also ship some of their output to Australia and New Zealand. The Beaver Cove Lumber and Pulp Co. have over 500,000,000 feet of timber, consisting mostly of hemlock and larch, which will be used entirely for pulp, the larch making practically as good pulp as the hemlock or spruce.

New Construction at Laurentide and Chicoutimi.

Construction has started on an addition to the finishing room of the Laurentide Co. at Grand Mere, Que. The building will be of steel, concrete and brick, three storeys high, and in dimensions, 70 x 250 feet. An extension is also being built to the groundwood plant of the Chicoutimi Pulp Co. at Chicoutimi, which will cost about \$350,000.

MEETING OF N. A. PULP AND PAPER CO.'S.

The North American Pulp & Paper Companies Trust give notice of a special meeting of the shareholders to be held at the Ritz-Carlton Hotel on May 22, 1919, for the purpose of considering the exchange of the Chicoutimi Pulp Company's common shares for a like amount, par value, of common shares of the Saguenay Power Company; to authorize an increase in the number of preferred shares from 25,000 to 30,000, and to reduce the dividend thereon from 7 per cent to 6 per cent cumulative from April 1st, 1919; to change the preferred shares, if increased, into Saguenay Power shares, and to increase the number of directors of the Chicoutimi Pulp Company to nine.

The Saguenay Power Company will become the Saguenay Pulp and Power Company, and proposes to acquire the controlling interest in the Chicoutimi Pulp Co., the St. Lawrence Pulp and Lumber Corp., the Chicoutimi Freehold Estates, Ltd., the Roberval-Saguenay Railway Co., the Saguenay Light & Power Co., and the Chicoutimi Port Co.

CORNWALL STRIKE ENDED.

Cornwall, May 12.—The strike in the finishing room of the Toronto Paper Co. mill here came to an end to-day, when all the female employees of the room, and most of the men returned to work.

The company has taken on a full staff and the four paper machines and the pulp mill has started up full blast again.

The employees of the finishing department handed a petition to the office demanding an advance of pay amounting to nearly 30 per cent. Later they were informed that the demand could not be complied with, and they walked out. The employees of the other departments continued to work, but with the finishing department closed it was impossible to keep the plant in full operation, and three out of the four paper making machines and the pulp mill were shut down.

The company's labor cost has doubled in the last four years.

IT MADE NO DIFFERENCE TO "THE STAR."

A short time ago the Montreal Star, which has maintained its price of 1c. per copy, with the exception of Saturdays, when the price is 2c., in spite of increases in many items of cost, and while practically every paper in Canada increased its rates, has finally succumbed to the pressure and is now selling at 2c. per copy every day. An inquiry from the Pulp & Paper Magazine as to the effect of this advance in price on the circulation of the paper is answered by the statement that practically no difference in this regard is noticed. This has been the result, or rather the lack of result, that is observed in practically every other case where the sale price of a paper has been increased, providing the paper had been filling a real place in the community.

FIVE MILLION SEEDLINGS A YEAR.

The Provincial Forester of Quebec, Mr. G. C. Piche, announces that the capacity of the tree nursery at Berthierville, is to be increased to an annual production of 5,000,000 young trees, partly in contemplation of the Provincial Government adopting a programme of forest planting on denuded Crown timber lands.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, May 12.—There is not much change in the general market situation except that things are veering around to good steady business. There is considerable unrest in labor circles, but most of the mills appear to be getting on very well with their help, although one strike last week came like a bolt from the blue, when the men demanded an increase amounting to 33 per cent on the average, and this in spite of the fact that two advances have been given them during the past year, and an eight hour tour instituted. While the newsprint companies have shown greater profits during the past year than before, the book and writing mills have not been able to make any such showing, and with decreased earnings and added demands upon their exchequer on the part of labor, it begins to look as if there will be a radical increase in the price of all kinds of book, bonds, ledger and writing papers.

Jobbers report that business is improving, and that those whose stocks were low are beginning to purchase more freely. During the past week there was a reduction of about 7 per cent on toilet papers, and only the week before there was a decrease of some 10 to 12 per cent on tissue papers. There has also been a decline in the price of jute twines from 4 to 5 cents per pound, and the discount on paper bags in earload lots has been increased from 2½ per cent to 5 per cent.

There is good demand for kraft paper of all kinds, and business in sulphate pulp is picking up. The improvement which was reported last week in sulphite pulp continues to grow, and with the increasing activity of the book mills on the other side of the line, more purchasers are entering the market. The worst has now passed in the pulp business, and from this out there should be something like the old time activity, paper box factories are buying more freely and getting busier with the approach of the summer season. More mills are turning their attention to export and will do a large business in this direction as soon as transportation facilities open up.

It is pleasing to learn, according to the returns submitted each month, that shipments of paper show

big gains and the only falling off is in mechanical pulp. There have been plenty of rains on the other side as well as in Canada, so that all the grinders can operate, while most of the mills have big stocks of wood on hand, and are not entering the market for fresh supplies at present. When the new tariff is brought down and the income tax for the coming year fixed and labor becomes more settled, and the soldiers are all home, there will be a much more settled feeling about the trade. There is no concern buying now any more than it feels justified in undertaking, and while the normal quantity of business is good there is naturally some restlessness owing to the manufacturers not knowing what is likely to happen. However, so far through the reconstruction period, the trade has come through very well, and before many more months are over, it is felt that the greatest business in the history of the industry will be done. Coated paper plants are busy, and so are envelope factories, while wrapping and building paper mills are rushed with business and on the whole the outlook is good.

The public have faith in pulp and paper enterprises, and this is evidenced by the way in which all securities are taken up and the constant rise in the price of stocks which are listed. Another indication of the stability of the future is the large number of new companies which are being formed. All industrial concerns, which have anything to do with wood, now take every precaution to see that their charters confer on them the right to manufacture, buy, sell and deal in pulp and paper. This shows that they are looking to the future with much interest. There has been a brisk demand, so dealers declare, for all kinds of wall papers, and there is a disposition to think that the requisitions will continue good in view of the extensive building operations. Some of the departmental stores have been putting on demonstrations of how wall papers are made, and others in their advertising have published illustrations showing the progress that has been achieved in the production of hanging paper. The result has been that the interest of the people has been aroused as never before.

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES 2074 2075 MURRAY HILL, NEW YORK

Write us when you
have any surplus
of

Ground Wood

Bleached or Un-
bleached. We are
always in the mar-
ket.

There is likely to be a general wrapping of bread, and this will cause wax paper concerns to have more business than ever. All waxing plants are busy at the present time, and some of them report that the bread wrapping trade is coming back with a vengeance. The newsprint business is good, and leading dailies in the big cities of Canada never contained as much business in the advertising line at this period of the year as they do now. With big stores taking as high as four full pages some days, it looks as if the future of the newsprint business is bright.

There is a peculiar situation about the whole publishing business just now, and that is the big papers are making more money than ever before, while the smaller ones have as difficult a struggle in numerous instances to get along as a man out of work. The result is further amalgamations, and in some instances reduction in size. There are more inquiries being received each week from foreign countries for paper, but no definite decision can be arrived at for some months yet, until it is known what transportation facilities will be afforded and just what freight rates, which are now very high, will be. There is an expression that more accommodation and lower charges will be the order within the next two months.

According to reports received from certain centres of New Brunswick, the pulp wood prospects do not look very bright for the coming season. The supply of cars during the past season was very good, and practically all the wood was shipped. This has filled the mills up with a good supply, practically lessening the demand. The price has dropped from \$12 per cord to as low as \$10, f.o.b. loading place. The output during the coming season will be about half of what it was last season. These figures apply more particularly to new territory, whereas in the older settled districts the production will be about the same. The prevailing quotations for four ft. peeled spruce and balsam pulpwood is from \$10.50 to \$11.50 per cord. There is very little stock on hand at present of last year's wood, and the situation is not the most promising. Unless the mills come out with a fair figure to comport with the high cost of living, there will not be a great deal of pulpwood got out this year. The pulpwood dealers are afraid of the market, and will not encourage the farmers to cut.

Pulp Prices.

	F.O.B. Mill.
Groundwood pulp	\$26.00 to \$29.00
Sulphite, news grade	\$65.00 to \$75.00
Sulphite, easy bleaching	\$87.50 to \$90.00
Sulphite bleached	\$100.00 to \$105.00
Sulphate	\$80.00 to \$82.50

NEW YORK MARKETS.

New York, May 10.—The market for paper has undergone appreciable improvement this week. Demand from various sources has broadened, and more business has been transacted than during any similar length of time in some months. Jobbers in common report a marked expansion in demand from not only their regular customers, but also from outside quarters, while activity in the export trade has quickened to a material extent.

In fact, judging from appearance, the market is rapidly getting into a position predicted for it for some time. Consumers are placing orders with great

freedom, and while most of them seem still inclined to restrict their buying to supplies immediately needed, indications are that they are being compelled by necessity in keeping the wants of their customers filled to broaden the scope of their purchases. Exporters tell of a growing demand from foreign buyers for various kinds of paper. This applies particularly to the South American trade, and the movement of paper in this direction is assuming proportions where it seems that this end of the business is going to play an important role in the future market.

The increased activity in the jobbing trade is reflected by enlarged operations of mills. Advises state that those mills that have been closed down are now running in a regular way, while those plants which have managed to keep going in some manner or other during the quiet spell are now reported to be operating at full capacity or very close to it. Manufacturers are gradually cutting down surplus stocks of their product, and are shipping out the bulk of their current output. Truly, the market is in a more favorable condition from every viewpoint.

Newsprint manufacturers are having little or no difficulty in finding a market for practically all the paper they are producing and at firm prices. Consumers are absorbing not only their full contract commitments, but are constantly coming into the market for additional supplies. The reason for this is self-evident. The volume of advertising the average newspaper is now carrying necessitates the printing of extra large editions, with the result that the consumption of news is large. Side runs are in good demand, and prices are fully maintained. Hanging paper is moving actively, and mills are busily engaged.

The book paper situation continues to show improvement. Publishers are buying in a consistent manner, and are repeatedly increasing the size of their orders for spot lots of paper to augment their contract supplies. Prices are firm, and there is a strong upward tendency to those quoted on most grades of books. Tissues are notably steady, and are moving in good volume. Jobbers are buying, and the demand is of a very healthy character owing to the fact that such supplies as merchants are absorbing are going almost directly into consumption.

Writings continue to be relatively the slowest moving class of papers, yet there has been an enlargement of the demand during the past few days. Dealers have not been as hesitant to place orders, and mills as a rule are securing sufficient business to keep them running at a fair ratio of normal capacity. Wrappings and other coarse papers are sought in better volume and prices are maintained.

The board market has shared in the activity generally prevailing, and most manufacturers are moderately well engaged. Reports have been heard of an increase in the price of board, but this has not been verified. Quotations are firm, however, and the tendency is unmistakably upward.

GROUND WOOD.—Mechanically ground wood is moving in a consistent way on contract, but demand for spot pulp remains rather quiet. Consumers are purchasing extra lots occasionally, but, on the whole, there is little call of an important scope from transient buyers. Quotations are maintained at from \$25 to \$27 per ton f.o.b., eastern grinding mills for No. 1 ground wood, and producers evince no disposition to lower their asking prices notwithstanding the difficulty some are experiencing in moving all of their output.

WOOD PULP TRADING CO., Ltd.

501 Fifth Avenue, Astor Trust Building
Cor. of 42nd Street
NEW YORK CITY

BRANCH OFFICES:

Buenos Aires, Argentine,
Rio de Janeiro, Brazil.

CHEMICAL PULP.—A decidedly better demand exists for the various grades of chemical pulp, and more business has been transacted within the past few days than for a long time. Local dealers and mail agents report consumers to be buying with considerably more freedom, and importers say they are gradually reducing their limited holdings of spot pulp. Prices are more or less irregular. Offerings of foreign pulp continue to be made at rather low figures, and this has necessitated domestic manufacturers lowering their quotations to a certain extent on some grades. Holders of imported pulp are disposing of dock and warehouse stocks at prices substantially below the cost of replacement, and the only explanation offered for this is that owners of such lots of Scandinavian pulp as are available in this market are anxious to liquidate supplies. At the same time, very little pulp is being bought on the other side for shipment to this market. Importers are unwilling to buy on their own account owing to the high prices prevailing in Sweden and Norway, while manufacturers in those countries are sending little pulp here on consignment. Kraft is the weakest item in the trade at present, and offerings of Scandinavian kraft at \$80 per ton ex dock and domestic kraft at \$70 at the pulp mill are noted. Domestic unbleached sulphite of newsprint quality is quoted at \$65 to \$70, easy bleaching at 4.25 to 4.50 cents per pound, and bleached sulphite at around 5.50 cents. Soda pulp is firmly quoted at between 1.25 and 4.50 cents at the pulp mill.

RAGS.—The rag market is in a much livelier position, and prices in some cases have advanced. Manufacturers show more interest and are absorbing increased quantities of practically all grades. Roofing stock in particular is sought. Felt makers are accepting virtually all the rags offered within reasonable price bounds and purchases have been recorded establishing values on higher levels. No. 1 roofing is selling locally at about \$36 per ton f.o.b. New York, while reports from the Middle West tell of sales at \$38 to \$40. White rags are notably higher, with dealers now demanding 5.75 cents a pound for No. 1 repacked old whites, and 5.25 cents for miscellaneous packing of No. 1 grade. Thirds and blues are moving in larger quantity at a price range of from 3.00 to 3.50 cents f.o.b. shipping point, depending on the packing and the amount of material involved.

PAPER STOCK.—Old papers fail to show the activity that exists in the markets for other kinds of paper mill supplies. The reason for this is difficult to ascertain. Some traders attribute it to the present situation in woodpulp; others are inclined to believe mills have bought ahead and are now purposely keeping out of the market in an effort to bring prices down. At any rate, demand is narrow, particularly for the better class of stock, and prices are unmistakably on the downtrend. Shavings are in a position where firm offers from consumers can secure them at almost any price within reason. No. 1 hard whites are available at around 3.75 cents a pound f.o.b. New York, and soft whites of No. 1 quality are offered at 2.65 to 2.75 cents. Books are fairly steady and in comparatively good demand. Sales of heavy books and magazines are reported at 1.30 to 1.35 cents New York and of over-issue magazines at 1.55 to 1.60 cents. Mixed paper and folded news are sought only in a limited way, with quotations ranging between 40 and 45 cents per hundred pounds on

the former, and from 50 to 55 cents on the latter.

BAGGING AND ROPE.—The market for old Manila rope is firm and demand is good. Indications are that dealers as a rule are sold ahead, and there is consequently an active inquiry for rope with which to cover commitments. Quotations run from 4.25 to 1.50 cents a pound f.o.b. New York for No. 1 packing. Scrap bagging is moving in scattered directions and in restricted quantity at a price basis of from 1.75 to 2.00 cents New York.

A LITTLE FUN AT GOTTESMAN'S EXPENSE.

At Christmas time, when remembrances were sent out by many firms in the paper trade, M. Gottesman & Co., addressed to the Pulp & Paper Magazine one of their combination telephone and calendar pads. The editor happened to open the package, and was so pleased with the appearance of the article, which was gotten up in aluminum with celluloid calendar disks, that he proceeded to attach it to his own telephone. The advertising manager claimed that the calendar was intended for his department, so to settle the dispute Gottesman & Co. were appealed to, with the result that a second pad was sent. The joke is still on the advertising department, as the president of the Industrial & Educational Press made off with this pad also. Fortunately our advertising manager has a good disposition.

TORONTO PAPER MFG. CO. EARNED LESS.

The annual financial statement of the Toronto Paper Company, Limited, for the year ended March 31, 1919, is less cheerful for the shareholders than that for the previous year, although the general tone of the report indicates that continued strengthening of the cash position has been one point kept in view by the management.

Earnings for the year, after taxes, but before any other deductions, amounted to \$162,374, as compared with \$198,590 in the previous fiscal period. Bond interest and dividend and bonus distributions were lower, while \$18,000 was written off to depreciation reserve as compared with \$32,000 the previous year. Surplus for the year amounted to \$48,896 as against \$63,050.

In their report to shareholders, directors state that owing to war taxes it was decided that it was prudent to reduce last year's bonus on the stock. There will be no change at present in their policy, which is to pay 3 per cent half-yearly, together with any bonus they can pay with confidence.

The properties are in good fiscal condition, and no important capital expenditures are contemplated. While it is impossible to forecast, they see no reason why the company should not enjoy a good year's business. A modest export connection has been formed during the year.

The annual meeting is scheduled to take place on May 16, at 2.30 p.m.

LA TUQUE WANTS BETTER SERVICE.

A delegation of citizens from La Tuque appeared before the Chamber of Commerce in Montreal last week to present a petition for better railway connections between that town and Montreal. At present a journey from La Tuque to Montreal entails two changes at Harvey and Garneau junctions respectively.

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WRITE FOR PARTICULARS

T. J. McGOVERN, 505 Lumsden Bldg., Toronto, Ont.

BRITISH PULP ASSOCIATION CONSIDERS CANADIAN PREFERENCE.

At the 22nd annual meeting of the British Woodpulp Association, which was held at the London Chamber of Commerce on the 13th of March, it was moved, "That in the opinion of this association Canada should be preferably treated as to its output of pulp." There was some discussion as to the advisability of passing such a motion and one member remarked that he did not think Canada was treating England very well by placing paper in that country at 1d. per pound less than it could be made there. Another member considered that in view of the difficulty that was experienced in delivering Canadian pulp that such a motion rather lacked point, it was a sort of blank cheque. Mr. Beck explained that the motion implied preferential treatment in every shape and form and others supported his proposition so that the motion was carried and it was therefore voted that the resolution be submitted to the Board of Trade.

An interesting discussion took place in regard to the paper trade restrictions. It was stated that the paper trade was in a perilous state and that many paper mills had closed down because of various restrictions and that more mills might have to suspend operations. Paper makers were loaded with high priced material which had been bought at enormous profit to the Government. Although one member suggested that any action of the pulp association protesting the free importation of paper from foreign countries during the period of reconstruction would seem a selfish move, yet such a resolution was passed. It was explained that the object of this resolution was to protect the paper industry of England.

WAR TRADE BOARD NOT TO ESTABLISH CREDIT RATINGS

The attention of the War Trade Board having been called to a statement appearing in the "Weekly Bulletin" of the American Manufacturers Export Association of March 29, 1919, to the effect that "with certain records which have been secured by the Bureau of War Trade Intelligence (of the War Trade Board) as the nucleus for the service, it is proposed to build up a new and distinct bureau of the Government whose sole duty it will be to furnish American exporters with credit ratings on firms in foreign countries who purchase American goods," they have authorized the following statement:

"The War Trade Board have no knowledge of the establishment of a bureau of the character above described, nor have they ever considered a proposal to make available for such purpose the records of the Bureau of War Trade Intelligence."

ELECTRICAL POWER AVAILABLE.

The Dominion Water Power Branch has just issued a concise tabulation of blocks of electrical power available for sale in Canada on January 1, 1919. The data include: name and address of company or municipality, primary power (water or fuel), amount of power for sale, rate for K. W. or H. P., and accessibility to transportation. The table is arranged by provinces. The primary power in Ontario and Quebec is all water, in Saskatchewan, Manitoba and Nova Scotia it is all fuel and in the other provinces a mixture. The Water Power Branch is thus endeavoring to assist Canadian industry to have comparative power figures on which to base plans for location.

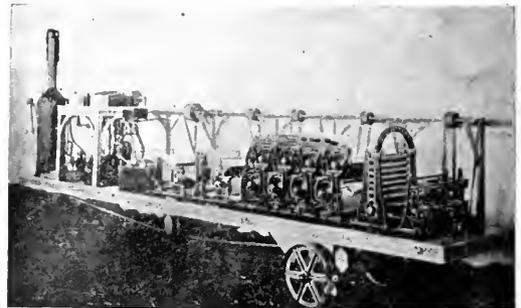
SOME FINE CANADIAN POWER PLANTS.

The art of catalogue making has reached a high state of development and an example of the attractive productions possible in the commercial field is found in the bulletins recently issued by Viele, Blackwell & Buck Exporters, Importers, Engineers and Contractors, 19 Wall Street, New York. A number of the illustrations shown are taken from construction work on Canadian power plants, both hydro-electric and steam. One of these pictures shows a method of transporting steel pipe in Northern Canada, in which eight large sections are seen on board a scow. Bulletins 1, 2 and 3 give much detailed information in regard to specifications for materials and the properties of the various steel pieces that enter into construction. In a special bulletin on power plants we find the introduction printed in English, French, Italian, Spanish, and Portuguese and among the pictures there are a number of interest to Canadians as they show developments at Niagara Falls, Ont.; the Northern Canada Power Co., Porcupine, Ont.; the Northern Ontario Light & Power Co., Cobalt, Ont.; and many other interesting pictures of modern steam and electric power plant installations. The stages of construction are shown in a number of cases and show the methods of procedure very clearly.

"BABY" CYLINDER MACHINE.

The illustration shows the miniature cylinder machine made by Joe Kaster in 1904 at the old Camas, Wash., mill. This machine was on exhibition at the Lewis and Clark Exposition, Portland, Oregon, in 1905 and regardless of size, actually made paper.

When you note that the length of truck used for foundation, is but thirteen feet, you will realize what a painstaking task it must have been to manufacture and assemble the hundreds of parts required to build this "Tom Thumb" paper machine. Each and every part is perfect in detail; as much so, as will be found



Joe Kaster's Baby Cylinder Machine

in the regulation paper-making machine. The machine was driven by standard Marshall drive and felts made from same material as used in present-day woolen felts. To enable you to judge width of machine, paper made measured ten inches in width. Dryer rolls are eight inches in diameter, calender rolls are two and three inches diameter, and all other parts of machine in proportion. One-fourth and one-eighth inch pipe was used in steam connections on dryers.

The machine was named in honor of H. L. Pittock, as shown by arch that surmounts the calender stack.

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STORAGE RESERVOIRS ONLY HALF-WAY MEASURE.

A Bulletin of the College of Forestry at Syracuse emphasizes the fact that the building of storage reservoirs alone will not solve the flood or water conservation problem in New York. The building of storage reservoirs must be combined with general reforestation.

The present interest in the development of water power in New York is emphasizing the problem of bringing about regular flow in streams for both power and domestic use. There is no question of course but that streams must be kept to a certain level throughout the year to be of value in the production of power. Where a stream fills its banks for a few months of the year and then dwindles to nothing, necessitating the use of steam power for the remainder of the year, these streams can be said to be of really little value to the state. There is no question but that the building of storage reservoirs at strategic points on water courses will assist in holding water back and allowing the streams to fill to a higher level through a longer period of the year, but the building of these reservoirs is only solving half the problem. If the forests are stripped off, allowing melting snow and rain to rush rapidly to the streams, this flood water will carry soil that will fill the reservoirs as rapidly as they are cleaned out. That this is the result of building reservoirs without proper reforestation of the headwaters of the stream has been evidenced repeatedly in the Alps in France and Italy, and in our own western mountains in California.

Forests have a marked influence in conserving the water which falls in the form of rain and snow. The branches of the trees break the force of the rain, letting it fall to the ground and pass into the soil easily. The cover formed by decaying leaves and sticks is a sponge-like mass called duff or humus, and this has a great water absorbing capacity. It takes up in proportion to its volume a vast quantity of water and gives it off slowly over a period of several months, thus maintaining springs and an even flow in the streams.

General uniformity of stream flow in every section of the country will probably be brought about only as the result of widespread and intelligent reforestation combined with a limited number of large storage reservoirs at the headwaters of streams. If in connection with the reforestation of the barren areas, storage reservoirs are constructed so that the flood waters of spring may be impounded and given off gradually during the dryer seasons of the year, the combination of the two—the forest and the storage reservoirs—will come as near solving the problem of uniform flow in our streams as anything that can be contrived by man. Proper control of runoff is the only thing that will maintain a supply of water in streams upon which manufacturing industries are dependent and insure proper levels for navigation.

While forests act as protectors of the soil and conservers of water, they will be producing a crop of wood that will give increasingly large returns. There are, therefore, both direct and indirect benefits to be obtained from the reforestation of the non-agricultural hillsides and ridges which form so considerable a part of the great state of New York. There should be, therefore, constant co-operation between

those who wish to develop the waterpower of the state or cities using water from our forests with the agencies carrying on reforestation. Without proper forest cover there can not be proper water supply.

BOVING & COMPANY ACQUIRE FACTORY.

Boving & Co., whose home office is at Kingsway, London, W.C. 2, have been prominent engineers for pulp and paper mill work for some years, and have equipped whole plants in a most satisfactory manner by careful oversight of construction by associated builders. During the war this concern acquired an engineering works at Stoke-on-Trent, have remodeled them considerably and contemplate further extensions. They will be equipped to build hydraulic turbines in units as large as 16,000 H.P., and are also working on large orders for pulp mill equipment for France, Japan and India. They expect soon to employ about 600 workmen.

TORONTO WILL BE THE MECCA.

Toronto will be the scene of a great gathering of journalists from all parts of the British Empire in September, 1920, when the Imperial Press Conference will meet in the Queen City. Sir Campbell Stuart, a member of the Executive Committee of the Empire Press Union, was in Toronto recently, conferring with local press officials on the preliminary arrangements for the conference.

The last meeting of the Imperial Press Conference was held in London, England, in June, 1909, and was one of the memorable gatherings of representative men in the history of the Empire. Leaders and makers of public opinion from Canada, Australia, India, Africa, Egypt and from the remotest reaches of Britain's overseas Dominions assembled and sat in close conference for four days. The meeting in Toronto next year will be the greatest conference ever held in Canada, and it will be one of momentous import to the future of the Empire.

ONE HUNDRED AND ONE TRIMBEY REGULATORS.

Some time ago there was described in the Pulp & Paper Magazine the TrimbeY Consistency Regulator and the Weight Regulator perfected by the same inventor. For a time these were handled by the Glens Falls Machine Works, but are now being manufactured by M. G. Tibbetts, of Glens Falls, N.Y., with whom is associated Mr. F. M. Champion, an engineer who was engaged in similar work before joining the military forces of the United States. The claim of the inventor, that the consistency regulator will automatically control and keep uniform the consistency of slush stock, seems to be substantiated by the number of instruments that are already in use; 15 of the 41 being installed in Canadian mills. The same may be said of the weight regulator which so governs the flow of paper stock to the machine that the weight of the sheet is held uniform without the constant attention of the machine tender, even though the density of the stock in the chest may vary considerably. Of the 60 weight regulators in use 27 are attached to Canadian machines.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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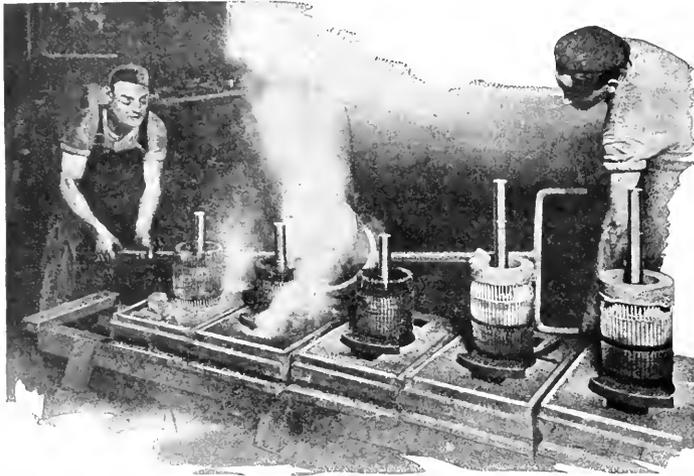
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EDITORIAL

WHO IS A CHEMIST?

The public has a very clear conception of the meaning of such terms as doctor, lawyer, minister, and perhaps, even engineer, but by many minds the word "chemist" is entirely misunderstood. Not only is the pharmacist often mistaken for a chemist, but even among those who have had some chemical experience the word does not carry the weight that it should as indicating the attainment of what might be called at least a standard degree of ability in this branch of knowledge. Many people who are associated in some way with chemical matters realize that there is a chemistry which deals with almost purely theoretical considerations and another branch which comes in more intimate touch with daily life and the problems of engineering and manufacturing, and which bears the general name of Industrial or Applied Chemistry. But whether a chemist devoted his energies to the field of Applied or the field of Pure Chemistry the name chemist has not carried the dignity and importance that its intimate association with daily life really warrants.

The young lawyer looks forward to passing the examination to the Bar and being admitted to the fellowship of the legal profession. The same may be said of the doctor, but the chemist and the chemical engineer have no standard to qualify by, and in the attainment of which he is enabled to claim the recognition of the community which he deserves. The work of the chemist during the war has shown not only the wonderful ability of this type of mind to concentrate on and solve problems of pressing military importance, but has also called attention to the many other ways in which the chemist has contributed to the welfare of the people.

At the convention of Canadian chemists, including members of the Society of Chemical Industry, which met in Montreal last week, there was organized the Canadian Institute of Chemistry, which has for its primary object the elevation of the status of the real chemist in the eyes of the people of the Dominion. The organization committee which was appointed at the convention a year ago has labored with great energy during the past twelve months to bring about such an organization and presented to the convention a well thought out and carefully prepared statement of what such an institution should be, and what it might accomplish. The importance of

the step is well shown by the length and earnestness of the debate upon almost every one of the items contained in the plan as presented by the committee. And while the debate waxed quite warm at times it is gratifying to know that no personal animosities were aroused over the points of conflict.

We are unfortunately unable to present at this time the revised plan of organization, but it is gratifying to know that a motion was passed with the result that the Canadian Institute of Chemistry was duly organized on Saturday, the 17th of May, 1919, and that a council was elected to select the names of the charter members from among the most distinguished men in this profession in Canada. A number of minor items were left for the council to decide, and it is expected that details of organization which could not be disposed of at the moment will soon be worked out by the council, and that before another convention is called there will be a truly Canadian organization which will represent the many really qualified chemists who are now laboring under the handicap which lack of public recognition has so long placed upon them.

There is a growing number of pulp and paper chemists in Canada, but for the most part they are conspicuously absent from meetings of Canadian chemists. Some few may be affiliated with foreign societies. Such membership does not exclude them from belonging to the Canadian section of the Society of Chemical Industry (or the new form of local affiliation with individual branches) nor from membership in the newly organized Institute. They should consider it a privilege as well as an obligation to belong to these organizations, and their employers should encourage them to do so. What strengthens the status of the chemist lengthens and broadens his service, and the service of the chemists is a growing factor in the development of our industries.

Mr. H. J. Roast, 393 Guy St., Montreal, is secretary of the council, and will be glad to have the names and addresses of every chemist in Canada, whether he wishes to apply for membership in the Institute or not, as will Mr. Alfred Burton, Toronto, secretary for the Society of Chemical Industry.

We would remind Mr. Becker that a newspaper press in England could not be very far from a paper mill anywhere on the busy island.

TEN MILLIONS FOR TECHNICAL SCHOOLS.

The public is beginning to realize that the public schools of Canada can be improved. This conviction has been expressed recently in two suggestions for financing improvements in the system. The financial aspect is most important, and must be carefully considered and provided for.

Major G. W. Stephens suggests using for this purpose any indemnity that Canada might happily receive from Germany. He said: "As that indemnity will go to the federal Government and as the provinces have control of education, I would suggest that the federal Government give a share of it to the provinces only on condition that every mother's son and daughter be taught the duties of citizenship from the ages of seven to twelve, in every school from the Atlantic to the Pacific. Let the press teach it, and let the churches preach it to their congregations." If no indemnity is received the Major would discourage subsidies to railroads and use the money for the benefit of the people.

Hon. J. A. Calder, Minister of Immigration and Colonization, has introduced in Parliament a measure for the promotion of technical education in Canada. He proposes to pay to the provinces, in proportion to population, ten million dollars from the Consolidated Revenue Fund. The payments would extend over ten years, beginning with the 31st of last March, and would gradually increase from \$700,000 to \$1,100,000 per year. The bill provides that no province shall receive a grant of more than the provincial expenditure for technical education. Not more than 25 per cent. of such grant is to be used for land, buildings or equipment. Other provisions are also made.

It is apparent that most of the fund would go to teachers' salaries. The need for increases here is painfully evident. There is, however, some question as to whether there are sufficient teachers available of such attainments as to warrant the expenditure of such a sum and there is more doubt as to the capacity of schools to handle the classes who should be in attendance. Perhaps Mr. Calder has overlooked the present inadequacy of school accommodation in placing such a restriction on the use of the fund, and also overlooked the possible desirability of allowing this temporary financial support to be put into permanent form by using more of it to erect and equip buildings, leaving the maintenance and salary burden more in the hands of the provinces, who must later take it on. If suddenly shouldered with the extra burden of \$775,000 (distributed, of course), the provincial authorities might find it a difficult task.

The idea of the bill is a good one, and some such legislation should be passed immediately. We believe it is a grave mistake to restrict educational development to technical education alone. There is urgent need for the training in Canadian citizenship and so-

cial and industrial obligations, such as Major Stephens referred to. This deeper foundation of true culture and character building is really more necessary than the increase in the means for merely material advancement.

If Great Britain settles on a policy of keeping the lid off in regard to all pulp and paper from the various parts of the Empire, we may expect to see capital flowing into Canada in an increasing stream from America, England and Scandinavia. Norwegian interests are already busy with pulp mill preparations, and as their expenses increase for wood, coal, sulphur and other materials, to say nothing of labor, one can hardly wonder that they are turning to consider manufacturing and marketing conditions on this side.

Laurentide stock seems to be like a ditch—the more you cut off it, the bigger it gets. There is talk of again dividing the shares, which now have a market value of more than \$220. For an honest, fair-dealing, law-abiding industry, Laurentide seems to get on pretty well.

WHO ARE NOT "CAPITALISTS"?

When people talk of "Labor" and "Capital" they usually mean by "Labor" the man who works with his hands by the day. By "Capital" they mean the corporation or big employer who grinds down his workers for selfish reasons. No wonder labor and capital, thus represented, are opposed to each other. This is due to a misunderstanding of the terms. Everyone who helps to produce anything useful to mankind is a laborer. The man who sits at a desk and plans is as much a laborer as the man who drives rivets or watches a loom. He is entitled to the reward of his effort. Nor could the mechanic exist without the planners forethought any more than the planner's plans could take shape without the strength and skill of the manual worker. Capital is an "accumulation of the products of past labor capable of being used in the support of present or future labor." That is to say, every man who, by work and thrift, has been able to save money or buy furniture or a house or a liberty bond is a capitalist. Does the man, who by hard work and careful expenditure has been able to buy a little home for his family, want this reward of his labor swept away?—Brockton Times.

In regard to the possibility of industry without capital, Dr. E. J. Dillon, an eminent authority, writing of Russia, says:

"Not ten per cent of the factories of Russia are working at the present time. Industry is practically at a standstill, because under the system of the Bolsheviks the factories have been seized by workmen who have no capital to carry on the industries. Of course, many workmen got a great deal of money, but what happened was simply that they took money and used it up on themselves and the things they were interested in or wanted to spend it for, and then there was none left. There is nothing left now. Economically, it is absolutely impossible for the Bolshevik Government and the Bolshevik system of running things to last."

Analysis of Coal

The Committee on Standards of the Technical Section of the C. P. & P. A. has approved the method of analysis compiled by the joint committee of the American Chemical Society and the American Society for Testing Materials. The text and illustrations are taken from the Journal of Industrial and Engineering Chemistry, Vol. 9, p. 100 (1917), by permission.

When the method has been before the Technical Section for a period of probation (six months), it becomes the adopted standard unless revised.

Preparation of Laboratory Samples.

Apparatus.

Air-Drying Oven.—The oven is to be used for air-drying wet samples, and may be of the form shown in Fig. 1. This is not absolutely necessary, but is economical where many wet samples are received.¹

Galvanized-Iron Pans 18 by 18 by 1½ in. Deep for air-drying wet samples.

Balance or Solution Scale for weighing the galvanized-iron pans with samples. It should have a capacity of 5 kg. and be sensitive to 0.5 g.

Jaw Crusher for crushing coarse samples to pass a 4-mesh sieve.

Roll Crusher or Coffee-Mill Type of Grinder for reducing the 4-mesh product to 20-mesh. The coffee-mill type of grinder should be entirely enclosed and have an enclosed hopper and a receptacle capable of holding 10 lbs. of coal. This is to reduce the moisture losses while crushing.

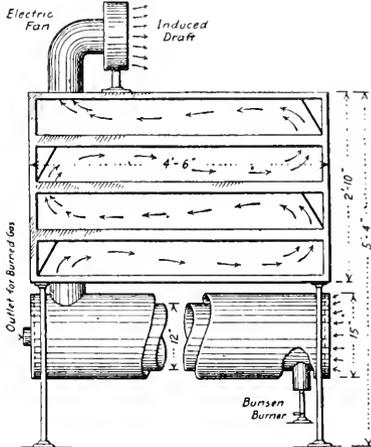


Fig. 1.—Drier for Coarse Samples.

The outlet for air at the top may be connected with a chimney or any other device which will furnish a suitable draft. (Bulletin No. 9, Geological Survey of Ohio, p. 312).

¹For details of air-drying oven see Bownoeker, Lord and Somermeier, "Coal," Bull. 9, 4th Series, Ohio Geological Survey, p. 312 (1908); or F. M. Stanton, and A. C. Fieldner, "Methods of Analyzing Coal and Coke," Technical Paper No. 8, Bureau of Mines, p. 4 (1912); or E. E. Somermeier, "Coal, Its Composition, Analysis, Utilization and Valuation," p. 71, McGraw-Hill Book Co. (1912).

Abbe Ball Mill, Planetary Disk Crusher, Chrome-Steel Bucking Board, or any Satisfactory Form of Pulverizer for reducing the 20-mesh product to 60-mesh. The porcelain jars for the ball mill should be approximately 9 in. in diameter and 10 in. high. The flint pebbles should be smooth, hard and well rounded.

A Large Riffle Sampler, with ½ or ⅝ in. Divisions for reducing the 4-mesh sample to 10 lbs. (Fig. II).¹

A Small Riffle Sampler, with ¼ or ⅜ in. Divisions for dividing down the 20 and 60-mesh material to a laboratory sample (Fig. II).

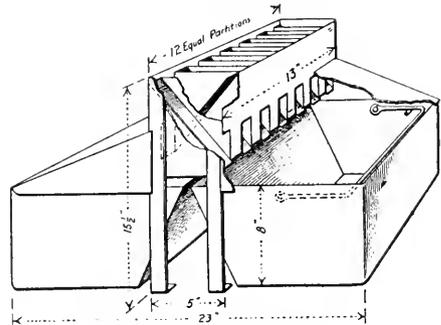


FIG. II.—RIFFLE SAMPLER
(Bulletin No. 9, Geological Survey of Ohio, p. 313)

An 8-inch 60-mesh Sieve with Cover and Receiver.

Containers for Shipment to Laboratory—Samples in which the moisture content is important should always be shipped in moisture-tight containers. A galvanized-iron or tin can with a screw top which is sealed with a rubber gasket and adhesive tape is best adapted to this purpose. Glass fruit jars sealed with rubber gaskets may be used, but require very careful packing to avoid breakage in transit. Samples in which the moisture content is of no importance need no special protection from loss of moisture.

Method of Sampling.

(A) When Coal Appears Dry.—If the sample is coarser than 4-mesh (0.20) and larger in amount than 10 lbs., quickly crush it with the jaw crusher to pass a 4-mesh sieve and reduce it on the larger riffle sampler to 10 lbs.;² then crush at once to 20-mesh by passing through rolls or an enclosed grinder, and take, without sieving, a 60-g. total moisture sample, immediately after the material has passed through the crushing apparatus. This sample should be taken with a spoon from various parts of the 20-mesh product, and should be placed directly in a rubber-stoppered bottle.

Thoroughly mix the main portion of the sample,

¹E. E. Somermeier, "Coal, Its Composition, Etc.," McGraw-Hill Book Co. (1912).

²If the sample is crushed to pass a 6-mesh screen it may be reduced to 5 lbs.

reduce on the small riffle sampler to about 120 g., and pulverize to 60-mesh by any suitable apparatus without regard to loss of moisture. After all the material has been passed through the 60-mesh sieve, mix and divide it on the small riffle sampler to 60 g. Transfer the final sample to a 4-oz. rubber-stoppered

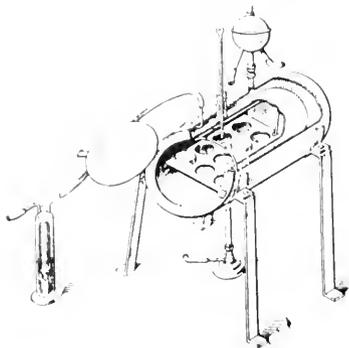


FIG. III—TOLUENE OR GLYCERIN AND WATER OVEN FOR DETERMINING MOISTURE
(Technical Paper No. 76, Bureau of Mines, p. 16)

bottle. Determine moisture in both the 60- and the 20-mesh samples by the method given under moisture.

Computation—Compute the analysis of the 60-mesh coal, which has become partly air-dried during sampling, to the dry-coal basis, by dividing each result by 1 minus its content of moisture. Compute the analysis of the coal "as received" from the dry-coal analysis by multiplying by 1 minus the total moisture found in the 20-mesh sample.

(B) When Coal Appears Wet—Spread the sample on tared pans, weigh and air-dry at room temperature, or in the special drying oven, shown in Fig. I, at 10 to 15° C., above room temperature, and weigh again. The drying should be continued until the loss in weight is not more than 0.1 per cent per hour. Complete the sampling as under dry coal.

Computation—Correct the moisture found in the 20-mesh, air-dried sample to total moisture "as received," as follows:

$$(100 - \% \text{ Air-drying Loss}) \times (\% \text{ Moisture in 20-mesh Coal})$$

100

$$+ \% \text{ Air-drying Loss} = \text{Total Moisture "as received"}$$

Compute the analysis to "dry-coal" and "as-received" bases as under dry coal, using for the "as-received" computation the total moisture as found by the formula in place of the moisture found in the 20-mesh coal.

NOTES.—Freshly mined or wet coal loses moisture rapidly on exposure to the air of the laboratory, hence the sampling operations between opening the container and taking the 20-mesh total-moisture sample must be conducted with the utmost dispatch and with minimum exposure to air.

The accuracy of the method of preparing laboratory samples should be checked frequently by re-sampling the rejected portions and preparing a duplicate sample. The ash in the two samples should not differ more than the following percentages.

	Per cent
No carbonates present	0.4
Considerable carbonate and pyrite present	0.7
Coals with more than 12 per cent ash, containing considerable carbonate and pyrite	1.0

Determination of Moisture.
Apparatus.

Moisture Oven—This must be so constructed as to have a uniform temperature in all parts and a minimum of air space. It may be of the form shown in Fig. III. Provision must be made for renewing the air in the oven at the rate of two to four times a minute, with the air dried by passing it through concentrated sulfuric acid.

Capsules with Covers—A convenient form, which allows the ash determination to be made on the same sample, is the Royal Meissen porcelain capsule No. 2, 7/8 in. deep and 1 3/4 in. diameter; or a fused silica capsule of similar shape. This is to be used with a well-fitting flat aluminum cover, illustrated in Fig. IV.

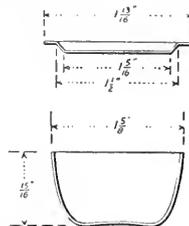


FIG. IV—PORCELAIN CAPSULE WITH FLAT ALUMINUM COVER

Glass capsules with ground-glass caps may also be used. They should be as shallow as possible, consistent with convenient handling.

Method.

(A) Sixty-Mesh Sample.—Heat the empty capsules under the conditions at which the coal is to be dried, stopper or cover, cool over concentrated sulfuric acid (sp. gr. 1.84) for 30 minutes, and weigh. Dip out with a spoon or spatula from the sample bottle approximately 1 g. of coal, put this quickly into the capsule, close, and weigh at once.

An alternative procedure (more open to error), after transferring an amount slightly in excess of 1 g., is to bring to exactly 1 g. in weight (± 0.5 mg.) by quickly removing the excess weight of coal with a spatula. The utmost dispatch must be used in order to minimize the exposure of the coal until the weight is found.

After removing the covers, quickly place the capsules in a pre-heated oven (at 104 to 110° C.) through which passes a current of air dried by concentrated sulfuric acid. Close the oven at once and heat for 1 hour. Then open the oven, cover the capsules quickly and place them in a desiccator over concentrated sulfuric acid. When cool, weigh.

(B) Twenty-Mesh Sample—Use 5-g. samples weighed with an accuracy of 2 mg. and heat for 1 1/2 hours; the procedure is otherwise the same as with the 60-mesh sample. Methods of greater accuracy for the determination of moisture are given in the preliminary report.

The permissible differences in duplicate determinations are as follows:

	Same	Different
	Analyst.	Analysts.
	P.C.	P.C.
Moisture under 5 per cent	0.2	0.3
Moisture over 5 per cent	0.3	0.5

Determination of Ash.
Apparatus.

Gas or Electric Muffle Furnace.—The muffle should have good air circulation and be capable of having its temperature regulated between 700 and 750° C.

Porcelain Capsules.—Royal Meissen porcelain capsules No. 2, 7/8 in. deep and 1 3/4 in. in diameter or similar shallow dishes.

Method.

Place the porcelain capsules containing the dried coal from the moisture determination in a cold muffle furnace or on the hearth at a low temperature and gradually heat to redness at such a rate as to avoid mechanical loss from too rapid expulsion of volatile matter. Finish the ignition to constant weight (± 0.001 g.) at a temperature between 700 and 750° C. Cool in a desiccator and weigh as soon as cold.

The permissible differences in duplicate determinations are as follows:

	Same Analyst. P.C.	Different Analysts. P.C.
No carbonates present	0.2	0.3
Carbonates present	0.3	0.5
Coal with more than 12 per cent of ash, containing carbonates and pyrite	0.5	1.0

NOTES.—Before replacing the capsules in the muffle for ignition to constant weight, the ash should be stirred with a platinum or nichrome wire. Stirring once or twice before the first weighing hastens complete ignition.

The result obtained by this method is "uncorrected" ash. For "corrected" ash see the preliminary report. The actual mineral matters in the original coal are usually very different in weight and composition from the weight of the "uncorrected" ash.

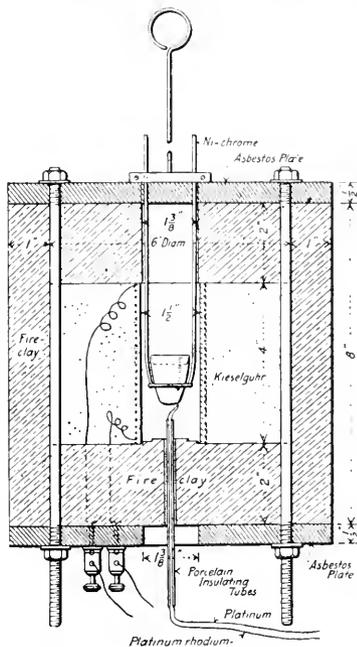


Fig. V.—Electric Tube Furnace for Determining Volatile Matter.

For 110 volt alternating current, 60 ft. of nichrome wire, No. 17 B. & S. gauge, will give the required temperature. The temperature must be controlled by an external resistance. (Technical Paper No. 76, Bureau of Mines, p. 21).

Determination of Volatile Matter. Apparatus.

Platinum Crucible with Tightly Fitting Cover.—The crucible should be of not less than 10 nor more than 20 cc. capacity; of not less than 25 nor more than 35 mm. diameter; of not less than 30 nor more than 35 mm. height.

Vertical Electric Tube Furnace; or a Gas or Electrically Heated Muffle Furnace.—The furnace may be of the form shown in Fig. V. It is to be regulated to maintain a temperature of 950° C. ($\pm 20^\circ$ C.) in the crucible as shown by a thermo-couple kept in the furnace. If the determination of volatile matter is not an essential feature of the specifications under which the coal is bought a Meker burner may be used.

Method.

Weigh 1 g. of the coal in a weighed 10 to 20 cc. platinum crucible, close with a capsule cover and place on platinum or nichrome-wire supports in the furnace chamber, which must be kept at a temperature of 950° C. ($\pm 20^\circ$ C.). After the more rapid discharge of volatile matter has subsided, as shown by the disappearance of the luminous flame, tap the cover lightly to seal the crucible more perfectly and thus guard against the admission of air. After heating exactly 7 minutes remove the crucible from the furnace and without disturbing the cover allow it to cool. Weigh as soon as cold. The loss of weight minus moisture equals the volatile matter.

Modification for Sub-Bituminous Coal, Lignite and Peat—

Mechanical losses are incurred on suddenly heating peat, sub-bituminous coal, and lignite; therefore they must be subjected to a preliminary gradual heating for 5 minutes; this is best done by playing the flame of a burner upon the bottom of the crucible, in such manner as to bring about the discharge of volatile matter, at a rate not sufficient to cause sparking. After the preliminary heating, transfer the crucible to the volatile-matter furnace and heat for 6 minutes at 950° C. as in the regular method.

The permissible differences in duplicate determinations are as follows:

	Same Analyst. P.C.	Different Analysts. P.C.
Bituminous coals	0.5	1.0
Lignites	1.0	2.0

NOTES.—The cover should fit closely enough so that the carbon deposit from bituminous and lignite coals does not burn away from the under side.

Regulations of temperature to within the prescribed limits is important.

Determination of Fixed Carbon.

Compute fixed carbon as follows:
 $100 - (\% \text{ Moisture} + \% \text{ ash} + \% \text{ Volatile Matter}) = \text{Fixed Carbon.}$

Determination of Sulfur by the Eschka Method. Apparatus.

Gas or Electric Muffle Furnace, or Burners for igniting coal with the Eschka mixture and for igniting the barium sulfate.

Porcelain, Silica, or Platinum Crucibles or Capsules for igniting coal with the Eschka mixture.

No. 1 Royal Meissen porcelain capsule, 1 in. deep and 2 in. in diameter. This capsule, because of its

shallow form, presents more surface for oxidation and is more convenient to handle than the ordinary form of crucible.

No. 1 Royal Berlin porcelain crucibles, shallow form, and platinum crucible of similar size may be used. Somewhat more time is required to burn out the coal, owing to the deeper form, than with the shallow capsules described above.

No. 0 or 00 porcelain crucibles, or platinum, aluminum or silica crucibles of similar size are to be used for igniting the barium sulfate.

Solutions and Reagents.

Barium Chloride.—Dissolve 100 g. of barium chloride in 1000 cc. of distilled water.

Saturated Bromine Water.—Add an excess of bromine to 1000 cc. of distilled water.

Eschka Mixture—Thoroughly mix 2 parts (by weight) of light calcined magnesium oxide and 1 part of anhydrous sodium carbonate. Both materials should be as free as possible from sulfur.

Methyl Orange.—Dissolve 0.02 g. in 100 cc. of hot distilled water and filter.

Hydrochloric Acid—Mix 500 cc. of hydrochloric acid (sp. gr. 1.20) and 500 cc. of distilled water.

Normal Hydrochloric Acid—Dilute 80 cc. of hydrochloric acid (sp. gr. 1.20) to liter with distilled water.

Sodium Carbonate—A saturated solution: approximately 60 g. of crystallized or 22 g. of anhydrous sodium carbonate in 100 cc. of distilled water.

Sodium-Hydroxide Solution—Dissolve 100 g. of sodium hydroxide in 1 liter of distilled water. This solution may be used in the place of the sodium-carbonate solution.

Method.

Preparation of Sample and Mixture.—Thoroughly mix on glazed paper 1 g. of coal and 3 g. of Eschka mixture. Transfer to a No. 1 Royal Meissen porcelain capsule, 1 in. deep and 2 in. in diameter, or a No. 1 Royal Berlin crucible or a platinum crucible of similar size, and cover with about 1 g. of Eschka mixture.

Ignition.—On account of the amount of sulfur contained in artificial gas, the crucible shall be heated over an alcohol, gasoline or natural gas flame as in procedure (a) below or in a gas or electrically heated muffle as in procedure (b) below. The use of artificial gas for heating the coal and Eschka mixture is permissible only when the crucible is heated in a muffle.

(a) Heat the crucible placed in a slanting position on a triangle, over a very low flame to avoid rapid expulsion of the volatile matter, which tends to prevent complete absorption of the products of combustion of the sulfur. Heat the crucible slowly for 30 minutes, gradually increasing the temperature and stirring after all black particles have disappeared, which is an indication of the completeness of the procedure.

(b) Place the crucible in a cold muffle and gradually raise the temperature to 870-925° C. (cherry-red heat) in about 1 hour. Maintain the maximum temperature for about 1½ hours and then allow the crucible to cool in the muffle.

Subsequent Treatment—Remove and empty the contents into a 200 cc. beaker and digest with 100 cc. of hot water for ½ to ¾ hour, with occasional stirring. Filter and wash the insoluble matter by

decantation. After several washings in this manner, transfer the insoluble matter to the filter and wash 5 times, keeping the mixture well agitated. Treat the filtrate, amounting to about 250 cc., with 10 to 20 cc. of saturated bromine water, make slightly acid and boil to expel the liberated bromine. Make just neutral to methyl orange with sodium hydroxide or sodium carbonate solution, then add 1 cc. of normal HCl. Boil again and add slowly from a pipette, with constant stirring, 10 cc. of a 10 per cent solution of barium chloride (BaCl₂ · 2 H₂O). Continue boiling for 15 minutes and allow to stand for at least 2 hours, or preferably over night, at a temperature just below boiling. Filter through an ashless filter paper and wash with hot distilled water until a silver nitrate solution shows no precipitate with a drop of the filtrate. Place the wet filter containing the precipitate of barium sulfate in a weighed platinum, porcelain, silica or aluminum crucible, allowing a free access of air by folding the paper over the precipitate loosely to prevent spattering. Smoke the paper off gradually and at no time allow it to burn with flame. After the paper is practically consumed, raise the temperature to approximately 925° C. and heat to constant weight.

The residue of magnesia, etc., after leaching, should be dissolved in hydrochloric acid and tested with great care for sulfur. When an appreciable amount is found this should be determined quantitatively. The amount of sulfur retained is by no means a negligible quantity.¹

¹ J. Am. Chem. Soc., 21 (1899), 1125.

of a coal is almost completely oxidized to sulfuric acid and the washings of the calorimeter may be used for the determination of sulfur.

(To be continued.)

“TRADING WITH THE FAR EAST.”

“Trading with the Far East,” a companion volume to “Trading with Latin America,” is a new title in the Foreign Trade series issued by the Irving National Bank, Woolworth Bldg., New York. It marshals facts and information for the man who is too busy to gather them firsthand, and outlines effective ways of meeting the problems arising in connection with the routine of trade activity in the Orient. In acquainting the manufacturer or exporter with outstanding factors in trade beyond the Pacific, it provides an interpretation for commercial purposes of conditions in what promises to be one of our most exceptional markets for years to come.

MATTAGAMI ISSUE UNDERWRITTEN.

It is understood that negotiations are practically completed with a group of Canadian and American bankers, headed by a Montreal financial house, for the underwriting of approximately \$1,500,000 of bonds of the Mattagami Pulp and Paper Company, one of the largest producers of easy bleaching sulphite pulp in Eastern Canada.

The company's plant at Smooth Rock Falls, Ont., has been in active operation for a little over a year, and has established an excellent record of earning power.

The purpose of the new financing is the completion of extensions now under way to increase the company's annual pulp output from 30,000 tons to 45,000 tons.

Census of Pulp and Paper Industry, 1917

(Continued from last issue.)

AGENCIES OF PRODUCTION—(1) CAPITAL—MILL EQUIPMENT—POWER EMPLOYED.

Five tables of the report (Tables XI, XII, XIII, XIV, and XV) deal with capital and mill equipment.

The first of these gives a general view of the distribution of capital investment by provinces under the headings (a) land, buildings and fixtures, (b) machinery and tools, (c) materials on hand, stocks in process and (d) "working" capital—cash, trading and operating accounts, bills receivable, etc. A total capital investment of \$186,787,405 is thus accounted for, of which \$84,609,584 was in Quebec, \$72,006,972 in Ontario and \$22,584,652 in British Columbia. Land and buildings represent an investment of \$84,461,837, machinery of \$59,266,596, whilst working capital was \$15,156,506.

Over 76 per cent. of the total investment is in the class of combined mills, 19 per cent. in mills producing pulp only and nearly 5 per cent. in mills making paper only.

Each province shows an increase in capital over 1915 except Nova Scotia, where the decrease amounted to \$199,030. British Columbia's capital investment rose from \$8,344,416 in 1915 to \$22,584,652 in 1917; New Brunswick from \$3,927,858 to \$7,136,277; Ontario from \$57,173,623 to \$72,006,972, and Quebec from \$63,641,956 to \$84,609,584.

The average total capital invested in pulp mills was \$1,057,610; in pulp and paper mills \$6,192,365; and in paper mills \$323,241.

Pulp Mill Machinery.—Table XII shows the equipment of mills engaged in the manufacture of ground wood or mechanical pulp by provinces for all classes of mills operating in 1917. The total yearly capacity of mills making ground wood-pulp in the Dominion was 1,088,431 tons, dry weight, of which Quebec's equipment represented 601,436 tons or 55.2 per cent. Ontario represented 357,250 tons, or 32.8 per cent., followed by British Columbia with 100,600 tons, or 9.2 per cent., New Brunswick with 21,145 tons or 1.9 per cent., and Nova Scotia with 8,000 tons or less than one per cent. The actual output of ground wood-pulp in 1917 was 923,731 tons.

Table XIII presents statistics of the equipment in mills making chemical pulp by the various processes. The sulphite process leads with a yearly capacity of 540,718 tons and an actual output of 400,433 tons. The sulphate process has a yearly capacity of 176,496 tons with an actual output of 135,854 tons, and the soda process, a capacity of 5,800 tons and an actual output of 4,136 tons.

Table XII.—Equipment in mills making Ground Wood Pulp by Classes of Mills, and by Provinces, 1917, (abbreviated.)

Schedule—	British Columbia	New Brunswick	Nova Scotia	Ontario	Quebec	Canada
All mills making ground wood pulp—						
Number of grinders	50	6	26	160	325	576
Capacity per 24 hours	330	27	105	1,154	1,995	3,611
Horse-power used on grinders	24,000	2,000	4,400	80,300	134,727	245,427
Yearly capacity of mill, dry weight, tons	100,600	8,000	21,145	357,250	601,436	1,088,431

Table XI.—Capital invested in the Pulp and Paper industry, by Provinces and Classes of Mills, 1917 (omitted).

Table XIII.—Pulp mill machinery by Processes for the Provinces and Canada, 1917.

	No. of Digesters.	
	Sulphate.	Sulphite.
All mills making pulp:—		
British Columbia	6	10
New Brunswick	5	10
Ontario	6	30
Quebec	19	30 ¹
Canada (total)	34	82 ¹

Table XIV.—Paper mill machinery (abbreviated.)

In all mills making paper—	British Columbia	Ontario	Quebec	Canada
Paper mill machinery.				
Fourdrinier machines	8	40	42	90
Capacity per 24 hours	460	1,249	1,044	2,753
Cylinder machines		6	7	13
Capacity, per 24 hours		359	198	557
Yearly capacity in paper, tons.	138,000	407,240	417,575	962,815

Paper Mill Machinery.—In Table XIV is given machinery with which the different classes of mills are equipped for the manufacture of paper. The total yearly capacity of the mills in the Dominion is 962,815 tons of paper, of which Quebec has a capacity of 417,575 tons, Ontario a yearly capacity of 407,240 tons, and British Columbia a yearly capacity of 138,000 tons. The actual output by provinces in 1917 was—Quebec 391,600 tons; Ontario 383,555 tons; and British Columbia 79,004 tons, or a total for the Dominion of 853,689 tons. From the figures above given it will be seen that Quebec and Ontario are nearing their full capacity, being within 25,975 and 23,685 tons respectively.

Power Employed.—Power employed whether owned or rented, is given in Table XV, which shows that the principal sources of power were (a) electric motors run by current generated by the establishment, namely, 1,620 units of 87,563 rated h.p. and 59,676 h.p. actually employed; (b) electric motors operated by rented power number 971 with a rated h.p. of 101,498, of which

¹Includes soda pulp machinery.

87,061 were actually employed; (c) water wheels numbering 352 with a rated h.p. of 287,800, of which 250,030 were actually employed; and (d) steam engines of which there were 304 units with a rated h.p. of 43,646 and 34,493 actually employed. Of the total power actually employed, 75 per cent was in pulp and paper mills, 22 per cent in pulp mills and 3 per cent in paper mills. The province of Quebec used 51 per cent of the total power actually employed, Ontario 31.3 per cent, British Columbia 13 per cent, New Brunswick 2.5 per cent, and Nova Scotia 2.2 per cent.

Table XV.—Power employed by Classes of Mills and Provinces, 1917 (omitted.)

(To be continued.)

Pumping Sulphur

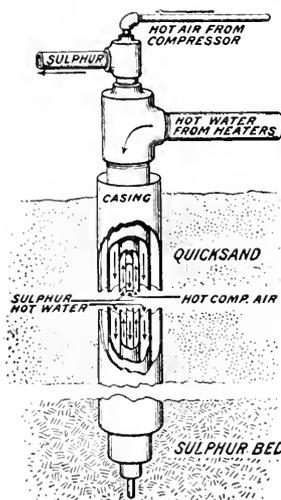
(From Dupont Magazine and The Little Journal.)

Large deposits of sulphur are found in various parts of the United States; in Nevada, Wyoming, Utah and in Louisiana and Texas. The deposits in the western states are not so large and for a variety of reasons have not been so readily available for production in large amounts at low cost.

Although the failure to solve the waste liquor problem of the "sulphite" industry stands as an indictment against the chemical engineer, his achievement in making available the inexhaustible sulphur deposits in Calcasieu Parish, Louisiana, is one of the most notable and picturesque among the many triumphs of American industrial research. A great deposit of sulphur lies 1000 feet below the surface under a layer of quicksand 500 feet in thickness. An Austrian company, a French company and numerous American companies had tried in many ingenious ways to work this deposit, but had invariably failed. Misfortune and disaster to all connected with it had been the record of the deposit to the time when Herman Frasch, an enterprising American chemist, approached its problem in 1890. Frasch had the backing of John D. Rockefeller at one time in this enterprise, and it was one of the big mistakes of that financier that he withdrew his support and forced Frasch to interest other capital. If Rockefeller had not been afraid of losing a few dollars he would to-day have been the sulphur king as well as the oil dictator. Frasch conceived the idea of melting the sulphur in place by superheated water, forced down a boring, and pumping the sulphur up through an inner tube. In his first trial he made use of twenty 150 H.P. boilers grouped around the well, and the titanic experiment was successful. The pumps are now discarded, and the sulphur brought to the surface by compressed air. A single well produces about 450 tons a day, and their combined capacity exceeds the sulphur consumption of the world.

Holes are drilled through the overlying deposits of sand or other material to the bottom of the sulphur bed. The beds often have a thickness of as much as 200 feet and cover an area of many square miles. The holes are cased or lined with ten-inch pipes which contain three other pipes one within the other, as is shown in diagram.

Water heated to 167° C. (322.6° F.) under a pressure of 100 pounds is forced down the well through the six-inch pipe in order to melt the sulphur. Heated



Frasch Apparatus for Extraction of Sulphur.

compressed air is forced down the one-inch tube, and mixes with the melted sulphur, reducing the specific gravity thereby—affecting it as yeast does bread—making it lighter. The sulphur is raised to the surface through the three-inch pipe by the pressure of the column of hot water combined with that of the compressed air. A series of strainers at the bottom prevent earthy material from being forced upward.

The melted sulphur is run into huge bins, 50 feet high, built of rough planks, where it cools and solidifies to form a block of practically pure sulphur, sometimes containing 100,000 tons. The block is broken by blasting, loaded on cars by means of steam shovels and shipped.

Sulphur has many important uses. Pasteur found that finely divided sulphur was effective in destroying parasites on trees, and vines and it is used as a constituent of sprays. It is used in wool bleaching processes and as a disinfectant, also in the manufacture of black powder and fireworks. A most extensive use is made of sulphur in the manufacture of hardened or "vulcanized" rubber, and of course, in the paper industry it is used in making the enormous quantities of sulphurous acid necessary in the production of "sulphite" or chemical pulp.

PAPER MAKERS WAGES UP.

The Spanish River Pulp and Paper Co. has agreed to the men's demand for an increase in wages amounting to 15 per cent above the scale set by the War Labor Board about a year ago for the paper makers, and the pulp makers have made a similar demand.

The strongest part of belt leather is near the flesh side, about one-third the way through from that side. It is therefore desirable to run the grain side on the pulley, in order that the strongest part of the belt may be subject to the least wear.

RECLAIMING WASTE LAND WITH FOREST.

Believing that many readers of the Pulp and Paper Magazine would be interested in the results of the planting on the shifting sands of Quebec, Mr. G. C. Piche, chief of the Quebec Forest Service, was asked for a statement on the subject. Immediately on his return from Europe he wrote the following concise review of what has been done. It is understood that the invitation to visit the plantations is by no means limited to the editor. Mr. Piche adds some figures on the number of trees in the provincial nurseries which will be interesting to those contemplating reforestation. The letter reads:

"We have set there about 80,000 transplants of Scotch and white pine, also Norway spruce with a small amount of green ash and elms. The Scotch pine seems to have made the best show. Spruce appears to do well in some special corners. The hardwoods were only tried to fill up the gaps where there was a tuft of grass on the edges of the land to be reforested. They have not proved to be very good though we met a few specimens apparently flourishing. The white pine has a delicate foliage and it will only make a good showing when its top is about two feet from the soil. We have covered nearly 45 acres which we consider as reclaimed. On the remainder of the area (250 acres) we have sown beach grass with great success. As you know this herb will grow vigorously in shifting sands, and it has been used extensively in Europe for the holding of the frontal dunes along the sea shores. It is our intention to resume the plantations this spring as we have about 75,000 trees which have been transplanted during two years on the grounds and which we intend to distribute through the beach grass zone.

I would ask you to take a trip to Laehute when our men will be at work, that is during the month of May.

We have done similar work at Berthier Junction but we have used there a different and perhaps a more efficient method, that is, we have employed only Scotch pines and planted them a little closer than at Laehute. Then, we have protected the surface against the carrying power of the wind by covering it partially with brush and debris of birch trees. The result has been very encouraging. We have set there about 40,000 trees covering 25 acres, forming little patches here and there throughout the sand. The beach grass was also used but found not to give prompt results as it takes about three years before it makes any show.

I firmly believe that the method employed at Berthier will give quick results and the loss of individual trees is very small. Naturally if there are any dangers of fire the brush will increase the chances of same.

The average number of trees shipped from the nursery during the last five years is about 500,000 and the present stock of the nursery is evaluated at 4,750,000, of which 3½ millions are spruces, half a million Scotch pines and the remainder consisting of various soft and hardwoods."

Belts of coarse, loose leather will do better service in dry warm places than in wet or moist. For use in these last-mentioned places try our Waterproof Cement Leather Belting; they are made of the finest and firmest of leather.

JAS. WHALEN ACTIVE IN PULP CIRCLES.

The many friends of James Whalen, of Port Arthur, President of the Whalen Pulp and Paper Co., Vancouver, and of the Port Arthur Shipbuilding Co., are congratulating him on attaining the half century mark in life. A few days ago he celebrated his fiftieth birthday. Mr. Whalen was born in Collinwood in 1869, and went with his parents to Port Arthur in 1873. There he was educated and first engaged in the logging business, and later became a railroad contractor. To-day, by his energy and business aggressiveness, he is connected with a large number of progressive industrial concerns, a number of which he has been the sole organizer of. He is President and General Manager of the Western Dry Dock and Shipbuilding Co., Port Arthur, President and General Manager of the Canadian Towing and Wrecking Co., President of the General Realty Corporation, Vice-President of the Canada West Coast Navigation Co., as well as President of the Port Arthur Shipbuilding Co. of Port Arthur, and the Whalen Pulp and Paper Mills, Vancouver.

It is just two years ago that the Whalen Co. entered the pulp manufacturing field on a large scale by amalgamating the British Columbia Sulphite Co., Mill Creek, Howe Sound, the Empire Pulp and Paper Mills, Swanson Bay, and the Colonial Lumber and Paper Mills, Quatsino Sound, Vancouver Island.

The mills give direct employment to 1,200 men, as well as several hundred more in logging operations.

The plant at Mill Creek is now producing 90 tons of sulphite fibre daily. The Swanson Bay plant is turning out about 30 tons of pulp daily. In August last the Whalen Co. opened their Port Alice unit, the first sulphite fibre plant on Vancouver Island. This has a capacity of 60 tons daily, but the mill and buildings are laid out to produce, when the market demands, double this quantity. George F. Whalen is general manager of the Whalen Pulp and Paper Mills.

The pulp and paper industry has been a rapidly expanding one in British Columbia. The Powell River Pulp and Paper Co., of Powell River, have an output of 225 tons of newsprint daily, as well as about the same quantity of groundwood and 50 tons of sulphite fibre. The Pacific Mills Co., with plant at Ocean Falls, B.C., have a daily capacity of 185 tons of newsprint, and 35 tons of kraft wrapping paper, while the Rainy River Pulp and Paper Co. at Howe Sound have been turning out kraft pulp only.

ALBERTA HAS FIRST HONORS.

One experiment in aeroplane work, and only one, has been authorized thus far by the Dominion Government. Some time during the summer the Dominion Forestry Branch will test a machine in Alberta. It is understood that the ordinary military plane as it stands is regarded as unsatisfactory for forest guarding, and that a stock machine of slow speed will be considerably altered under the direction of Canadian aviators who understand fire protection work. This is an interesting and commendable move on the part of the Dominion Forestry Branch and will be eagerly watched.

CANADA'S CHEMISTS FORM INSTITUTE.

The Canadian Institute of Chemistry came into being at the closing session of the Canadian chemists' convention at the Windsor Hotel on Saturday. The new Institute will be formed on the lines of the Institute of Chemistry of Great Britain and Ireland, and will have a body of fellows and associates who will use after their names the letters F.C.I.C. and A.C.I.C., respectively. The body will seek incorporation in each of the provinces of the Dominion, and will in time become a closed body.

Definite requirements for admission were laid down, the object being to raise the profession of chemistry and chemical engineering to a strong position among the other learned professions.

A nucleus of twenty-eight charter members was elected, and in their hands was left the election of officers for the first year of the new Institute. Dr. J. Watson Bain, of Toronto, will be chairman of the body of twenty-eight until other officers are chosen. The original members are:

Prof. M. A. Parker, Winnipeg; Harold J. Roast, F.C.S., Montreal; E. G. R. Ardagh, B.A.Sc., Toronto; Dr. J. S. Bates, Kenogami, P.Q. Dr. George Baril, M.D., Montreal; Dr. Harold E. Bigelow, Sackville, N.B.; Dr. A. T. Charron, St. Hyacinthe, Que.; J. A. Macdonald Dawson, B.A., Vancouver; Dr. L. F. Goodwin, F.I.C., Kingston, Ont.; I. Grageroff, Esq., Montreal; Dr. D. M. McIntosh, Vancouver; Dr. A. McGill, Ottawa; J. Rice, F.I.C., Ottawa; MacKay and C. C. Forward, Nova Scotia; Dr. R. F. Ruttan, McGill University; Dr. F. F. Shutt, Ottawa; S. J. Cook, Ottawa; Dr. Lash Miller and Alfred Burton, Toronto; F. J. Birchard, Winnipeg; Prof. McLaurin, University of Saskatchewan; T. Thorvaldson, Saskatoon, and Messrs. Lehman and Kelso representing Alberta.

The fervent hope that the future destiny of the chemical industry in Canada would be for the establishment of the peaceful arts of reconstruction, instead of being devoted to the production of destructive agencies, as has been necessary during the past four years, was the keynote of the sentiments expressed at the closing banquet of the Convention held on Saturday night.

A resolution, moved by J. N. Stephenson, seconded by Dr. Milton Hersey, was passed embodying recommendations for compulsory education up to the age of 14 years, with a possibility of continued education for two or more years. The resolution also emphasized the necessity for education along the lines of community interests, training in citizenship, and higher salaries and requirements for teachers. The resolution will be sent to the Ministers of Education in the various provinces of the Dominion.

S. J. Cook, Ottawa, moved a resolution, and was seconded by A. H. C. Heitman, Toronto, in which the Federal Government was strongly recommended to enact immediately such legislation as will preserve to Canadians the privilege of continuing to utilize enemy owned dye and chemical patents in Canada, under a system of licenses as at present. The resolution was passed unanimously.

Professor E. G. R. Ardagh, of the University of Toronto, extended a cordial invitation from the chemists of Toronto to hold the next convention in that city.

Technical Association, June 11-14.

Technical Section, Kenogami, July.

U. S. APPROACHES END OF TIMBER.

People talk of a coming coal famine. But at the lowest computation there is plenty of coal in the world to carry us on for a thousand years to come. The famine that is coming soon—that is almost on us now—is in timber.

Barring Russia and Scandinavia, no European country has had timber enough for her own needs for a long time past. As for the United Kingdom, we have been spending over twenty-five millions a year for years past on imported timber, most of it from Norway and the United States.

But the States are rapidly coming to the end of their own resources. During the past 30 years they have cut over seven hundred thousand million feet. Figures like these mean little to anyone, so let us mention that the weight of this timber was 1,400 millions of tons or enough to load 250,000 large steamers.

Canada is as badly off. There is said to be now no merchantable pine within 300 miles of Ottawa. Pine has doubled in cost between 1900 and 1914. Its present price is four times what it was ten years ago. Burma teak has seen a rise in price almost equal to that of pine.

Oak is getting scarcer every day, and railway companies are having the greatest difficulty in getting the American oak which has been considered indispensable for wagon scantlings.

Honduras, once considered a veritable treasure house of tropical timbers, is cut almost clear, while Cuba and San Domingo are in a similar plight. America is now importing largely from Africa.

The one great forest remaining is that of the Amazon, and much of that wonderful timber is quite inaccessible. It looks as though we must either replant or go without.—Pearson's Weekly.

TREES FOR SALE FOR REFORESTATION.

The Pulp & Paper Magazine has received from the Berthierville Nursery a list of various trees which they have for sale this year. It includes 18 varieties, ranging in age from two to nine years, and in height from 2 to 36". Of some species there are several hundred thousand trees available, and for others only a few thousand. The prices range from \$2.50 per thousand for Norway and White Spruce up to \$75.00 per thousand for the blue or Colorado Spruce. A second list gives trees more suitable to decorative planting, with prices ranging from 5c. and 10c. up to 50c. apiece. These trees are older and higher, and there are fewer of them available. Of the forest trees we might note particularly: 251,000 Norway Spruce, 808,000 White Spruce, 44,000 Blue Spruce, 20,000 Engelmann Spruce, 160,000 White Pine, 400,000 Scotch Pine, 67,000 Blue Spruce, 99,000 Douglas Fir, 36,000 European Larch.

NASHWAAK MAY HAVE TWO MILLS.

The Nashwaak Company of Fairville, have been shipping their output of pulp to the United States, but there is some talk that it plans on utilizing a new mill at Marysville for its American trade and manufacturing at its plant at St. John for overseas export. The market for pulp in Great Britain is said to be strong, as newspapers are resuming their normal size as fast as they can arrange for supplies of paper.



UNITED STATES NOTES

Commissioners of conciliation were detailed late last week by the United States Department of Labor at the request of Vice-President R. G. Dahlberg, of the International Paper Company, to several of its plants in an effort to end strikes that were called earlier in the week by paper mill workers, who argue that the armistice terminated wage and working agreements made for the period of the war. The War Labor Board maintains that the war will not be over until the treaty of peace is ratified. Mr. Dahlberg told Labor Department officials that the industry could ill afford to stand an interruption at this time, and hoped the men would be induced to return to work, leaving adjustment of differences to a board of arbitration. Commissioner Joseph R. Buchanan has been assigned to offer mediation at the plants of the company at Fort Edward, and Commissioner F. J. Rohde has been detailed to International Falls. One of the principal grievancees, all of which have to do with the question of increased pay, is that the papermakers have been granted the full increase demanded, while an effort is being made to reduce the demands of the other unions.

Active support is being given to the plan of securing employment for all returning soldiers, sailors and marines by the Employers' Council of the re-employment committee of New York for service men. The American Paper and Pulp Association, the Association of Employing Printers and the Master Printers' Association are three paper and allied trade organizations who are members.

The recently organized Peerless Paper Products Company of Menasha, Wis., is ready to start construction work on its projected plant at Menasha. A site has been acquired and the contract for the building work will be awarded in the near future. Paper specialties will be the principal product of the new concern.

The New York office of the War Trade Board at 45 Broadway, was permanently closed last Thursday. Matters which come under the jurisdiction of this organization until the signing of peace will be taken care of at the Custom House by C. J. Brooks, acting for the Bureau of Imports; James F. Kane, for the Bureau of Transportation; and M. B. Wilcox, for the Bureau of Exports.

It is expected that an agreement to take the place of the award of the War Labor Board last year will soon be reached by union representatives, and the five newsprint manufacturers who have been meeting recently at the Murray Hill Hotel in New York to discuss the basis for a definite agreement. The employees, pending further discussions, have agreed not to declare strikes in the mills of the companies involved until the final agreement is submitted for approval to the employers.

The recently formed Folding Box Manufacturers National Association meets on Thursday, Friday and Saturday of this week at the Hotel Traymore, Atlantic City, N.J. The meeting, which is for the general membership and open also to all folding box manufacturers of the country, whether identified with the association or not, will be devoted to subjects pertain-

ing exclusively to the folding box industry, such as industrial conditions, group management, assembling of statistics, trade practice and competitive conditions and anything relevant to the industry that may be considered for the consideration of the members.

An undeleated chemical and dyestuff census prepared by the Bureau of Foreign and Domestic Commerce has been completed. It will be made public next week. The census gives import of dyes and chemicals by trade name.

The Wisconsin Conservation Commission has issued an order that prohibits the discharge of waste into the rivers and other bodies of water in that state. This means that all paper mills in Wisconsin must immediately install machinery for the disposal of industrial waste, which, it is declared, has heretofore been largely responsible for the pollution of the State's streams and lakes.

The first annual convention of the National Paper Box Manufacturers' Association, held May 7 and 8, at Atlantic City, N.J., brought together all the trade interested in box board, fancy papers and allied supplies. In all, over 300 delegates attended the sessions. W. C. Carlson, of the Milwaukee Paper Box Company, was elected president; E. F. Wentworth, of the Hayes Box Corporation, Haverhill, Mass., was chosen vice-president. Other officers elected were: Henry Stortz, of Henry Schmidt, Philadelphia, treasurer, and J. L. Kalleen, Philadelphia, secretary. After war conditions and the labor question were among the more important topics discussed. There was a consensus of opinion that, owing to lack of proper labor, production would be much restricted for a long time and, as a consequence, prices must remain high.

The possible merger of several of the biggest chemical concerns of the country is being discussed in the financial district of New York. No announcement has been made, nor is any expected in the immediate future on such a combination, but it is known that stockholders of some of the concerns reported to be interested in the merger have been approached by directors in a roundabout way to find out their attitude toward the proposition. The concerns reported to be considering the huge combination are the National Chemical and Aniline Company, the General Chemical Company, the Smet-Solvay Company and the Barrett Company. It is believed that such a combination would produce the largest firm of its kind in the world, and probably it would rival in size and importance the Steel Corporation. The idea behind such a merger, of course, is a determined plan to present a strong front against invasion of German-made chemicals or dyes.

With the idea of aiding its employees to bring down the cost of living, The Lakeside Paper Company of Neenah, Wisconsin, recently purchased a carload of high grade Java coffee, selling it at cost to the employees. The latter were enabled to get at 33 cents a pound coffee that otherwise would have retailed at 40 cents. The company is now arranging to lay out for use of its employees a large community garden in which they can raise their winter supply of vegetables.

Technical Section

REVIEW OF RECENT LITERATURE.

D.4. Automatic grindstone dresser. Pulp & Paper, 17, No. 14, p. 331 (1919).—Riley's patent dresser consists of a main carriage, containing water passages and providing a cover for the ways on which it moves, on which is mounted, at right angles, a cross carriage carrying the burr. By hydraulic power, the burr is caused to press against the stone, move across its face, withdraw from the stone, and repeat the cycle. The depth of cut is regulated by a hand wheel.—R. C.

F.0. Soda pulp manufacture. E. Sutermeister, Pulp & Paper, 17, No. 14, p. 327, No. 15, p. 351, No. 16, p. 375 (1919).—Black liquor should reach the evaporators at about 8° Be. These may be of the type in which the liquor is beaten into a spray through which hot gases pass, of the type in which a thin film of liquor is raised on iron disks into a current of hot gases, or of the multiple effect type.

The concentrated liquor is burned in a cylindrical furnace about twenty feet long by nine feet outside diameter, which is lined with from nine to fifteen inches of brick, and is provided with a firebox at the discharge end. Properly burned ash glows but does not flame. The capacity of the above furnace is about thirty tons of ash per twenty-four hours, with a possibility of as much as forty-three tons under the most favorable conditions. If salt is present due to the use of electrolytic caustic soda, the amount should be about six per cent. By using a boiler to recover heat from the furnace gases 150 to 160 H.P. per 21 tons of ash can be developed. Soda losses in the stock may be 8 per cent, but may be reduced by washing the gases with dilute liquor. Well burned ash contains 65 to 80% sodium carbonate. Leaching of the burned ash is done either in open or in pressure tanks, both utilizing the counter current principle.

Screens may be of the flat diaphragm type, with plates having slots .010—.012 inches wide or of the centrifugal type. The latter is preferable and requires about one-half horse power per ton of pulp per 24 hours. For one pound of fibre there is in the wash pits 3.53 lbs. of water, at the knotter, 87.7 lbs., and at the screens, 135.2 lbs. Loss of fibre in the concentrators may be about 1.2%.—R. C.

K.6. Removing impregnating material from paper. W. O. Gaynor, Assignor to M. Goodman, Chicago, Ill. U. S. Pat. 1,284,647, J.S.C.I., 38, No. 3.—The impregnated paper is immersed in a liquid with which the impregnating material is freely miscible, only when fused, and the liquid is heated directly to a temperature sufficient to fuse the impregnating material and to cause the convection currents to agitate the paper and diffuse the impregnating material throughout the liquid. The liquid containing the dissolved impregnating material is then withdrawn.—D.E.S.

K.23. Manufacture of waterproof paper. J. T. Croll, Glasgow, Eng. Pat. 121,318, J.S.C.I., 38, No. 3.—The web of paper is passed direct from the delivery end of the paper-making machine through a bath of water-proofing material, such as a solution of wax. The paper is led into, through, and out of the bath by guide rolls, and passes into a drying chamber, in which it travels round a series of rolls, while subjected to the action of currents of air produced by fans or by forced draught.—D.E.S.

M.9. A new type of portable conveyor. Pulp & Pa-

per, 17, No. 18, p. 427, (1919).—A scoop conveyor, using a flat belt and side retaining plates, handles as much material as one of the troughed belt type two-thirds again as wide and raises it 25 per cent higher.—R. C.

P.2. Pulp and paper courses at Syracuse University. Pulp and Paper, 17, No. 15, p. 349, (1919).—A short course in paper and pulp, dry kiln engineering, and timber grading is to be given from April 15th to June 1st. Lectures and laboratory demonstrations will be combined with semi-commercial work and mill visits. The course is designed primarily for mill men.—R. C.

P.5. Ontario's pulp and paper mill accidents. Pulp & Paper, 17, No. 18, p. 417 (1919).—The report submitted at the annual meeting of the Ontario Pulp & Paper Makers' Association is given. The report of the Workmen's Compensation Board for 1917 is included. Carelessness on the part of the injured caused 70.91% of injuries, unavoidable causes 18.68%, carelessness on the part of a second party 9.43%, and not classified causes 0.98%. Fingers were injured in 27.58% of the cases, hands in 12.46%, back, ribs or legs in 19.48%, eyes in 4.62%, head or scalp, 7.65%, arms 9.34%, feet or toes, 12.56%, and miscellaneous 6.31%.—R. C.

R.2. Revised classification system for pulp and paper literature. Pulp and Paper, 17, No. 16, p. 382 (1919).—R. C.

R.5. Imports of pulpwood into the United States. Pulp & Paper, 17, No. 17, p. 398 (1919).—Data by months from 1915 to 1918 inclusive, is given.—R. C.

DRYING PAPER AND PAPER BOARD.

A British patent has been granted to the Thames Paper Co., Ltd., and Mr. J. B. J. Privett, engineer, covering improvements in drying paper, paper board, etc.

The steam employed is led to the drying cylinder by a pipe and, after having given up its heat in the drying cylinders, is withdrawn therefrom to a condenser by means of a syphon-pipe and header which may communicate with several drying cylinders or several sections each consisting of a group of drying cylinders. The mouth of the syphon-pipe dips below the surface-level of the condensed water accumulated in the cylinder. The interior of the condenser is in communication with an air-pump adapted to keep the pressure within condenser approximately at or below atmospheric pressure, and to pass the condensed water to a hot well, whence the water is returned to the boilers by a force pump or injector.

An additional advantage is gained in consequence of the partial or complete removal of the usual non-conductive film of air from between the wall of each drying cylinder and the body of steam within the cylinder.

The device whereby exhaust steam, when used as a source of supply to the drying cylinder, is reheated to the temperature required in the drying cylinders, may be heated by electric resistance coils, gas jets, or other means as may be found most convenient.

The cooling water for the condenser as supplied from a water tank, the water, after passing through the condenser, is employed in a suitable part of the papermaking or other apparatus, as by the shower pipes.



PULP AND PAPER NEWS

J. F. MacKay, who for fifteen years was business manager and treasurer of the Toronto Globe, and in August last was appointed treasurer of the Russell Motor Car Co., Toronto, has become secretary-treasurer of the Willys-Overland, Limited, West Toronto, and entered upon his new duties. Mr. MacKay is a former President of the Canadian Press Association.

An exhibit of a real paper coat from Wahn, Germany, is attracting much attention and comment in the window of a large Yonge street clothing dealer in Toronto.

At the seventh soldiers' banquet tendered returned men in the Armouries, Toronto, this week, there was a set of tables known as Newspaper Row. Each of the Toronto dailies acted as host, and the event was one of the biggest yet organized in the line of military feasts.

Plans are now well under way for starting work on the new pulp and paper mill of 200 tons capacity, which will be erected at Kapuskasing, Ontario, by the Spruce Falls Pulp and Paper Co., Limited. It is likely that construction will get under way next month.

James Patterson, editor and proprietor of the Mirror, Meaford, Ont., passed away recently, in his 37th year. He had conducted the Mirror since the death of his father in 1912.

John L. Forsythe, of Buffalo, N.Y., representing the American Writing Paper Co., spent a few days in Toronto recently on business.

At a meeting of the Executive of the Ontario Safety League, held in Toronto, of which A. P. Costigane, safety engineer of the Ontario Pulp and Paper Makers' Safety Association, had the pleasure of witnessing a private exhibit of the film, entitled, "The House That Jack Built," at the Universal Film Co., 106 Richmond street West, Toronto. This film has been loaned to Mr. Costigane by the National Safety Council, and was shown at Georgetown on Tuesday night of this week at a local picture house. There was a large and representative attendance of employees of the two coating mills, and the Barber mill in that town, and a short address was delivered by Mr. Costigane on Safety Work. Another film entitled "Careless America," is expected to arrive in a few days, and the two will be shown at Safety Rallies to be held in Toronto, Frankford, and other towns after which they will be taken to Northern Ontario and the West, by Mr. Costigane, who is arranging for several Safety gatherings among paper and pulp mill employees.

J. Hewitt, Jr., President of Paper Sales, Limited, Toronto, has returned from a business trip to Quebec, Montreal and other eastern points.

There have been several meetings of protest on the part of the bakers of Toronto, owing to the decision of the Board of Health, calling for the wrapping of all kinds of bread. It is pointed out that the staff of life is high enough in price at the present time, without having an extra two cents tacked on to cover additional expense for paper and labor if all loaves have to be sealed. In the larger plants, where bread wrapping machines are used, the cost would be about one and one-eighth of a cent a loaf, and in the smaller bakeries where the work would have to be carried out by hand, the outlay would be fully two cents a loaf. It is probable, owing to the strong opposition against the order of the Board of Health, it will be modified. There is now talk of having only a paper band around each loaf, which would avoid contact of fingers in handling.

Owing to the letting of the water out of the old Welland canal, practically all the mills in the Niagara Peninsula will close down for a few days. The

Robert T. Houck, of George H. Mead & Co., Dayton, Ohio, formerly Toronto representative of the Laurentide Co., was in Toronto last week, calling upon a number of old friends in the trade.

G. W. Saunders, of Toronto, chief of the accounting department of the Mattagami Pulp and Paper Co.,

has gone to Smooth Rock Falls, Ont., where he is now permanently located. The head offices of the company have been removed from the tenth floor of the Bank of Hamilton Building, Toronto, to the thirteenth floor.

Several members of the Ontario Safety League, as well as pulp and paper men, on the invitation of A. P. Costigane, safety engineer of the Ontario Pulp and Paper Makers' Safety Association, had the pleasure of witnessing a private exhibit of the film, entitled, "The House That Jack Built," at the Universal Film Co., 106 Richmond street West, Toronto. This film has been loaned to Mr. Costigane by the National Safety Council, and was shown at Georgetown on Tuesday night of this week at a local picture house. There was a large and representative attendance of employees of the two coating mills, and the Barber mill in that town, and a short address was delivered by Mr. Costigane on Safety Work. Another film entitled "Careless America," is expected to arrive in a few days, and the two will be shown at Safety Rallies to be held in Toronto, Frankford, and other towns after which they will be taken to Northern Ontario and the West, by Mr. Costigane, who is arranging for several Safety gatherings among paper and pulp mill employees.

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Interlake Tissue Mills announce that they will continue to run, as the electric power for the operation of the plant is secured from Niagara, and the water used for filtering, which usually is drawn from the canal, will be obtained from the town of Merritton, arrangements having been made to that effect. The plant is very busy at the present time, doing a large export business in tissue papers with New Zealand, South Africa and Great Britain, in addition to an active domestic demand.

S. J. Moore, of Toronto, who is President of the F. N. Burt Co., and the Pacific-Burt Co., has been elected Honorary President of the West End Y. M. C. A., Toronto, in which institution he has always taken a deep interest.

Among the Toronto firms who are affected by the big tie-up in Winnipeg, are Barber-Ellis, Limited, W. J. Gage & Co., Bridgden, Limited, British & Colonial Press, MacLean Publishing Co., Hugh C. Maclean, Limited, and others.

Sydney W. Ewing, manager of the Montreal branch of the Victoria Paper and Twine Co., spent the past week at the Toronto office.

J. Holt, representing the Nashua Gummed & Coated Paper Co., Nashua, N.H., called upon the trade in Toronto and other cities during the past week.

The Dickson Co., Ltd., Peterboro, has been granted a federal charter, and incorporated with a capital stock of \$1,000,000, and headquarters in Peterboro. Wide powers are conferred upon the company, who are authorized to take over as a growing concern, the business, lands, leases, franchises, assets, etc., of the Dickson Co. of Peterboro, Ltd., which concern was incorporated under the provincial laws of Ontario. The company is empowered to own and operate saw mills and mills for the production of boxes, sash doors, furniture, etc.; to manufacture and deal in lumber of all kinds, and to own and operate ground wood and chemical pulp plants, paper, cardboard and other mills. Among the incorporators are Dickson Davidson and S. Dickson Hall, of Peterboro, and others.

The plant of the Garden City Paper Co., Merritton, is rushed with orders at present, and may have to withdraw shortly from the market until production catches up with the business in hand. The wax paper division is also very busy.

The new machine of the Brompton Pulp and Paper Co. at East Angus, is rapidly being erected, and will soon be in operation. This is the first new machine to be put in service in Canada since fighting ceased in Europe.

B. C. Root, of the Hydraulic Machinery Co., is on his way to B. C. (meaning British Columbia this time), where he will doubtless sell enough "Hymae" pumps, presses and wet machines at least to pay for the excursion. He is stopping off at several points en route, and on return. If he has as good a time as the editor did last summer, he will want to stay at about every place he stops.

R. W. Hovey and J. N. Stephenson visited the plant of Bennett, Ltd., Chambly Canton, P.Q., last week. They were entertained by O. F. Bryant, who explained the manufacture of leather board, which was invented by F. C. Norton, President of the company. Mr. Bryant has installed an experimental plant, consisting of a Dilts beater and Noble & Wood wet machine, with necessary chests, pumps, and mo-

tor. A chemical laboratory is also being equipped. W. F. Norton, who has been with the American army in France is back on the job.

Chicoutimi Pulp Co. plans erection of a \$375,000 mill. Cement, lumber, belting, shafts, pulleys, hydraulic presses, grinders, wet machines, centrifugal pumps and heating apparatus will be required. Plans are in progress for repairs to the mill, says the Contract Record.

SEAPLANES TO SCOUT ST. MAURICE FORESTS.

The province of Quebec is not to be behind in its measures for forestry protection. The St. Maurice River Forestry Protection Association has completed arrangements for guarding the forests of the members of this association by means of aeroplanes.

Through the medium of Hon. C. C. Ballantyne, Minister of Marine and Fisheries, the St. Maurice Forestry Protective Association, which has been working in close harmony with the Provincial Government for forest protection for many years past, has made an arrangement whereby there will be two seaplanes start on the task of patrol work of their forests by June 1st.

The two machines will be turned over by the minister next week, and will fly from Halifax to Three Rivers at that time. By June 1st they will be ready for their patrol work. Stewart Grant, who has been with the British Navy for two or three years and has the Navy Cross for sinking a submarine, will be in charge of the operations of the seaplanes. He is a Montreal boy. The general technical direction of the aeroplanes will be under Major MacLaurin, Royal Canadian Air Force.

The St. Maurice River Forest Protective Association has the second largest forest area to protect, that of the Upper Ottawa being the largest in the province. The St. Maurice reserves total 15,000 square miles of forest area.

CUT LOGS LOOSE—FINED \$50.

Quebec, May 8.—A trapper, canoeist, settler who opens up a river blocked by rafts, booms or logs is liable to severe penalties in Quebec province, according to a decision delivered here to-day by Judge Langelier, in the Quebec police court.

Eddy Boisvert, a settler in the Abitibi region, was charged with having smashed a boom holding logs on the River Harriana, above Amos. Boisvert admitted having cut the boom loose with an axe, but he claimed that a river was a public thoroughfare, and that no one had a right to block it. This was admitted by the court, but the latter added that no man has a right to cause the loss of logs or rafts even to clear the way of a river, but that any one finding a river or stream obstructed by logs, rafts, booms, etc., may sue the owner of such obstruction for damages.

The court fined Boisvert \$50 and costs or 15 days' jail, and Judge Langelier said that the next settler or whoever comes for trial on a similar charge will get the full penalty of the law.

If there is too great a distance between the pulleys, the weight of the belt will produce a sag, drawing so hard on the shaft as to cause great friction at the bearings; while at the same time the belt will have an unsteady, flapping motion injurious to itself and to the machinery.



CANADIAN TRADE CONDITIONS.

Toronto, May 19.—Mills generally report that business is getting better all the while, and a good, steady, even trade prevails. There are signs multiplying on all sides that the cost of paper will go up instead of descending. Some of the big newsprint plants have advanced the wages of the paper makers by 15 per cent, and pulp makers will also get an increase. Then other mills have adopted the three system production costs are going up all the while, and the consumer will, of course, have to meet the demand eventually, since all costs are passed on to him. As stated last week there was a reduction on toilet papers, this amounting to five per cent. The discount off list prices is now 30 per cent, instead of 25 as formerly, and on ear load lots the following is in effect—30, 20 and 10, instead of 25, 20 and 10. It is stated that where any reductions were made this side of the line, it has been to meet American competition. Some of the plants across the border have been very slack, and have been looking to Canada for business and cutting the figure to secure orders. This applies more to wrapping paper, toilet and tissue, and specialty plants than any others.

Notice has been sent out by the board mills that there has been a reduction of 10 per cent on strawboard, chipboard and vat lined board of 10 per cent, amounting to reductions of \$7 per ton in the case of the first two, and \$7.50 in the third. One company in a letter to the trade, state that owing to the uncertainty prevailing, especially in connection with labor, they are unable to state definitely the period during which the new prices will prevail, and they reserve the right to withdraw them at any time.

Paper box factories are getting very busy, and report a good outlook.

Business with all other plants is moving along nicely, and the demand for pulp of all kinds, with the exception of ground wood, is improving. Prices are holding firm. Jobbers report that during the present month trade has been very satisfactory, and buyers are entering the field for larger supplies. They realize owing to the general industrial restlessness that

prices are liable to be advanced at any moment, and are taking time by the forelock. In order to meet the demands of labor some mills are considering giving their employees who have been with them over five years, two weeks' holidays, and those who have been under five years and over one in the service, one week. Owing to the excessive exaction made by railway employees it is felt that higher freight rates may soon be ushered in, and this will add to the cost of paper.

The export business is looming up better and shipments have been made by a number of concerns to New Zealand, South Africa and to England. As cargo space is released, there will be more and more Canadian paper sent abroad. Some mills, which never did any foreign business, are contemplating working up a connection that will take about one-quarter to one-third of their normal output. More and more inquiries are being received every week from foreign sources, making diligent inquiry relating to supplies, prices, etc.

At the annual meeting of the Toronto branch of the Canadian Manufacturers Association it was charged by a leading publisher that there was a combine among the book mills. A resolution was carried protesting against any interference with the tariff of Canada, until a commission is appointed to investigate thoroughly and devise a tariff which shall be equitable and just to all classes, and that will best serve the welfare of the country as a whole. It was pointed out that the tariff was a national question, and should not be decided in the interest of any one section, but in the interest of the entire people.

Assertion of Combine is Absurd.

In regard to the assertion that a combine exists among the makers of book papers, several manufacturers regard the charge as not serious enough to warrant a denial for, on the face of it, the allegation is absurd. Speaking of the attitude of the industry a leading manufacturer said, "It is true we have an association, but prices are never mentioned or thought of. In the interest of greater production, to prevent waste, eliminate unnecessary lines, conserve supplies, and furnish good material and service

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2075

Have an extensive
and steady market
for

KRAFT PULP

When you have
any surplus to
offer write us

to our customers, we have formulated certain trade customs to which the jobbers have agreed. We have adopted the substance basis and certain standards now prevail, but to talk of a combine among book paper manufacturers, where each mill turns out a different variety, and with a product so diversified in character as book and writing paper is nothing short of ridiculous. If book paper were like bricks, steel billets, ingots, shingles or some other commodity of a regulation basis, size and weight, where there is practically no deviation from certain regulations there might be something worth while paying attention to, but not in a variable commodity like paper, where no two mills produce exactly the same quality, texture or ingredients.

The Government auditor, who was put to work investigating the books, reported that no excessive price was obtained, and what has the investigation amounted to? "The book mills are making less money to-day than they did a year ago, much less, and this shows that we have not advanced prices to keep pace with rising costs. I would like to see the affairs of some publishers investigated by the Commission, and I believe the boot might be on the other foot," said a book paper manufacturer.

Wax paper plants are well engaged at the present time, and have large orders from confectioners, who are very busy. On the whole the paper trade is moving along steadily, and considering the unrest which prevails on all sides and the many strikes which are in progress in other trades, there has been a minimum of labor troubles. The principal reason for this is that practically all mills have adopted the eight hour plan, whereas many other trades have not. The manner in which certain bond issues of large companies are being taken up by investors shows that the shrewd ones have full confidence in the future of the industry.

There is a good demand for newsprint, and the big dailies continue to carry more advertising at this season of the year than they have at any period since the war. It was announced from Ottawa that no longer are certain dailies in the Dominion, which happen to be of the right political stripe, on the patronage list. It was admitted that formerly such a list was in existence, but it does not prevail to-day. Newsprint manufacturers believe that the verdict of the Appeal Tribunal, which is expected any time now, will be satisfactory, and that they will get justice in view of advancing costs and higher rates of wages which prevail.

In twines there has been a considerable drop in price. Government control of the jute industry in Great Britain is now off, and there has been a decided drop in jute twines, the mills quoting much lower figures, while Canadian quotations are from three to four cents less per pound.

Paper.

*News (rolls) at mill, in earload lots	\$3.45
*News (rolls) in less than earload lots	\$3.52½
*News (sheet) at mill, in earload lots	\$3.80
*News (sheets) in less than earload lots	\$3.92½
xBook papers (earload), No. 1	\$9.75
xBook papers (ton lots) No. 1	\$10.00
xBook papers (earload), No. 2	\$9.50
xBook papers (ton lots), No. 2	\$9.75
xBook papers (earload), No. 3	\$8.25

xBook papers (ton lots) No. 3	\$8.75
Ledgers	18c up
Sulphite bonds	13½c
Light tinted bonds	14½c
Dark tinted bonds	16c
White Wrappings	\$5.25
Writings No. 2 (M.F.)	12½c up
Coated book and litho, No. 1	\$12.25
Coated book and litho, No. 2	\$11.25
Coated book and litho, No. 3	\$10.50
Coated book and litho, colored	\$12.50 to \$14.00
Grey Browns	\$5.25
Writing No. 1 (S. C.)	13c up
Fibre	\$7.35
Manila, No. 1	\$7.35
Manila B.	\$5.60
Tag Manila	\$6.00
Unglazed kraft	\$9.00
Glazed kraft	\$9.00
Tissues, bleached, 20 x 30, per ream	\$1.20
Tissues (unbleached sulphite) per ream	\$1.10
Tissues, cap, per ream	90c.
Tissues, manila, per ream	80c.
Natural greaseproof	15c
Bleached grease proof	19c
Genuine vegetable parchment	22c.
Bleached white glassine	22c
Drug papers, whites and tints	8c.
Paper bags, manila (discount)	35 per cent
Paper bags, kraft	27½ and 10 per cent.
Confectionery bags	34 per cent
Gusset bags (manila)	35 and 15 per cent
Straw board	\$63.00
Chip board	\$63.00
Vat lined chip board	\$67.50
Filled wood board	\$83.00
News board	\$80.00
Double manila lined board	\$90.00
Manila lined folding board, chip back	\$87.50
Pulp folding board	\$95.00
Jute board, No. 3	\$63.00
Tag board	\$120.00
White patent coated board	\$115.00 to \$130.00
Grey folding board	\$115.00
Pasted board	\$95.00

*For Canada only.

x These prices are for machine finish, super-calender one-half cent higher.

Pulp Prices.

	F.O.B. Mill.
Groundwood pulp	\$26.00 to \$29.00
Sulphite, news grade	\$65.00 to \$70.00
Sulphite, easy bleaching	\$85.00 to \$90.00
Sulphite bleached	\$100.00 to \$105.00
Sulphate	\$80.00

NEW YORK MARKETS.

New York, May 18.—Firmness and activity have been the outstanding characteristics of the paper market this week. Demand has steadily undergone expansion, and it can be accurately said that the market is now in a better condition than has prevailed for a long time. Not since the pre-armistice days have buyers operated with the freedom that has attended their actions during the current week, and representative members of the trade say that every

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NEW YORK CITY

BRANCH OFFICES:

Buenos Aires, Argentine,
Rio de Janerio, Brazil.

indication points to the arrival of the period of activity that has so long been anticipated.

Exporters and domestic consumers alike are placing orders for sizable quantities of paper. Evidently, buyers have finally regained confidence in the market and are purchasing accordingly, or else their requirements have expanded to the point where they have been compelled to seek larger amounts of paper. Reports from mill centres are highly favorable. Practically all plants, with the exception of box board mills, are running at much greater capacity, with some operating full. One of the most encouraging features of the situation has been the increased demand for fine papers. Buyers have come into the market for substantially heavier quantities of bond and ledger papers, and while demand has run more toward the cheaper qualities than ordinarily, the aggregate movement of these descriptions of paper has assumed sizable proportions. Under the broader demand, prices tend strongly upward. Rag bonds in particular incline upward in value, and manufacturers are reported to be frequently refusing to book orders ahead at the prices accepted for small lots of paper for immediate delivery.

Another strong item in the trade is book paper. Mills in general are operating at close to capacity, and the majority of them are having little difficulty in finding a ready outlet for practically all of their production. Prices are hardening and advances seem inevitable if the present demand continues. Book mills in the West are especially busy. Those in the Kalamazoo district are reported turning down orders in some instances, while manufacturers further West are experiencing a lively demand for their product.

The newsprint situation has been strengthened by the strike of operatives in the International Paper Company's mills, necessitating the shutting down of some of the largest print paper plants in the States. Considerable concern is felt by trade factors over the strike. Present reserve stocks of newsprint are far from large, and it is appreciated that available supplies will soon be entirely eliminated if the mills should remain down for any length of time. Every effort is being made to settle the strike, and it is hoped that Government agents of the Labor Department will effect a compromise between the manufacturers and mill workers so that production will be resumed. Prices on news are very firm, as would be expected under the circumstances, and holders are guarding their unsold stocks with all possible care so as to keep their regular customers supplied.

Tissues are firm and moving in decidedly better volume. Wrappings also are sought in larger quantities and prices are firming. The one weak spot in the market lies in box boards. For some reason or another, consumers of boards are doing remarkably little buying, and mills are seriously in need of orders. Prices are being quotably maintained, but indications are that some manufacturers are reducing their quotations in an effort to stimulate demand. Chip board is obtainable at around \$37.50 to \$40 per ton at the mill, and the probabilities are some supplies could be purchased down to \$35.

GROUND WOOD.—The strike among newsprint mill workers, compelling some plants to close down, has had no material effect on the mechanical pulp market, other than being creative of a slightly easier demand. Shipments are still going forward to contract buyers, and occasional sales of fairly sized ton-

nages are being made to transient purchasers. Prices are at about the same levels, grinders quoting from \$26 to \$27 per ton for No. 1 prime pulp at the producing point, with some offerings of small parcels at \$25 noted.

CHEMICAL PULP.—There is little or no change to report in the chemical pulp market. Demand has ruled fairly active this week, and prices are maintained at generally unaltered levels. Consumers are absorbing larger amounts of sulphite than for some time, and there is not the hesitancy shown in paying the prices asked by manufacturers that there was a short while ago. Consuming mills apparently are using more pulp and consequently are placing orders for what they need without reluctance. No new developments are recorded in the foreign situation. Very little pulp is arriving from the other side and importers are firm in their conviction that it would be poor business judgment to purchase supplies on their own account in Scandinavia with the future filled with so much uncertainty. Such pulp as is being bought in Sweden and Norway, therefore, is on contract for consumers here, with the result that spot stocks are being reduced rather than increased. Domestic unbleached sulphite of newsprint grade is quotable at \$65 to \$70 per ton at the pulp plant, while domestic easy bleaching is offered at \$85 to \$90 and bleached sulphite at 5.25 to 5.75 cents a pound. Kraft of domestic origin is available at \$70 a ton, while Scandinavian kraft is quoted at the relatively low price of around \$80. Foreign unbleached sulphite is selling at 4.00 to 4.25 cents ex dock, while such lots of bleached sulphite as are available are priced at 8.00 to 8.50 cents per pound.

RAGS.—The rag market is in a stronger position than has been evident in a long time. The entrance of roofing felt manufacturers into the market several weeks ago has prompted consumers of other kinds of material to resume buying, and the movement of rags during the current week has reached broader proportions than at any time since pre-armistice days. Prices have advanced in quite a few instances. Repacked thirds and blues are now quoted at around 3.50 cents a pound f.o.b., New York, as against 3.00 to 3.25 cents, the prices ruling up to a short while ago. White rags are selling at a basis of 5.75 cents for No. 1 repacked whites, and are sought in increasing volume. Roofing rags have risen sharply in price. No. 1 stock is now held at an average figure of 1.90 cents f.o.b. New York, while No. 2 packing is moving freely toward mills at 1.75 to 1.80 cents. Offerings at the higher prices are far from plentiful. Dealers are very bullishly inclined regarding roofing rags, and are holding a portion of their stocks for higher prices. New cuttings are firm and moving in a steady manner. White shirt cuttings of No. 1 quality, which not so long ago were being bought by manufacturers at around 10 cents a pound, are now practically unobtainable for less than 11 cents, while numerous dealers are demanding more.

PAPER STOCK.—Waste paper has thus far failed to share in the increased activity prevailing in other papermaking materials. The chief reason for this is that board mills haven't the necessary volume of business to bring them into the market for sizable tonnages of old paper, and dealers and packers are experiencing no little difficulty in locating outlets for their product even at the low level of prices now ruling. Prices are characterized by an easy undertone,

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**INVICTUS FIBRE
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and there is no question that many grades of old paper are selling at figures below the present cost of production. Mixed paper of No. 1 grade is available at 40 cents per hundred pounds f.o.b. New York, and folded news at 50 cents. Shavings are moving in such light volume that it is a difficult matter to ascertain just what market values are. Offerings of No. 1 hard white shavings at 3.85 to 4.00 cents per pound New York, however, are noted, while No. 1 soft whites are available at 2.75 cents. Books are about the firmest grade of stock and heavy flat books and magazines are freely bringing 1.35 cents New York in sales to mills.

BAGGING AND ROPE.—A strong tone is displayed by old Manila rope and sales at 4.50 to 4.75 cents a pound have established higher prices this week. Scrap bagging is sought only in a limited way, with the bulk realizing no more than 2 cents New York.

CANADA'S OPPORTUNITY.

The announcement made in the House of Commons by Sir A. Geddes, of the Government's decision to remove the restrictions on imports of paper opens the way for a greater utilisation of Canadian supplies, which should be available shortly, says the Yorkshire Post. The pulp and paper industry of the Dominion was compelled, owing to war-time exigencies, to do little more than mark time while the world-conflict raged, and the production possible under the hampering restrictions hardly sufficed to meet the home demands. The leaders of the industry, however, did not allow their view to be obscured by prevailing conditions, and the anticipated post-war development is now in progress. With new capital available for an extension of manufacturing plant, Canada, in addition to satisfying her home requirements, will be able to meet in larger measure the ever-increasing demands from abroad. The shipping shortage may have temporarily a restraining influence on the broadening of the trade with our other Colonies and with South America, but the Canadian Government are alive to the necessity of securing greater cargo space, and their official representatives in London and the Canadian trade mission are doing all that is possible in this direction.

GREAT OPPORTUNITIES FOR CANADIAN PRODUCTS.

Major Barlow, whose firm of Paper Mill Agents is located at 36-40 Ludgate Hill, London, E.C. 4, has communicated the following encouraging note on trade prospects with England:

All the business world—and lastly but not least—the Paper World—is anxiously waiting for the settlement of Peace—a just Peace, in order that it may set its house in order and settle down once more to something like normal trade. One thing only will then be likely to upset our calculations—namely, Government fetters in the form of regulations and restrictions—which, however, are likely to be released when we have approached the day of Peace. All enterprising manufacturers who have prepared for the 'after war' possibilities, can avail themselves of the great opportunities for fields of expansion. All markets must be in a depleted state of supply and, as the demands of labor and this cause of disturbance to trade, have been satisfied, and our demobilized men settled down to pre-war occupations, as a natural corollary, demand must increase and trade expand.

This will be the case in all markets, and none the less so in the British market, where all anticipate a great revival in trade and increase of production and consequent decrease in cost, by which means alone, can an individual firm and a country hold its own and pay the accumulation of debts.

Most eyes in the Paper World on this side are turned to our great Dominion—Canada—to whom we look to satisfy a good portion of our requirements in pulp, boards and paper, and judging from the great expansion that has taken place there during the last ten years, we venture to think we will not be disappointed. No country is in a better position and has better natural resources to meet the demands of these branches of trade, and as markets reopen to the natural flow of trade, we are confident Canada will not be found lacking in enterprise to satisfy all demands for pulp and paper and their accessories, made upon her.

A NEW DIRECTORY OF PAPER MAKERS.

A publication whose annual appearance is looked for as regularly as the coming of the new calendar is the Directory of Paper Makers of the United Kingdom, which is published by Marchant Singer & Co., 47 St. Mary Axe, London, E. C. 3. When these publications arrive they are sometimes laid away for some time before even being looked at, but it happened with the current issue that a day had not passed before we had occasion to refer to it twice, and by means of the excellent cross indexing of the paper mills we were immediately able to obtain the information that was sought.

The directory for 1919 is the 43rd annual publication. It sells for 2 shillings, or 2s. 9d., including postage, to countries outside of the United Kingdom. The 262 pages of the publication contain a wealth of information regarding the paper mills, paper dealers, trade customs and manufacturers and dealers in pulp mill machinery and supplies. The following list of contents will give the reader a conception of the scope of this excellent directory:

Alphabetical List—

England and Wales.

Scotland.

Ireland.

List of Paper Enamellers, etc.

Paper Makers' Representatives & Paper Agents, London,

Provinces,

London Wholesale Stationers.

List of Mills—Numerical.

List of Mills—Alphabetical, with the Names of the Occupiers.

List of Mills—in Counties Alphabetically.

Classification of Makes with Makers' Names.

Trades Designations used by Paper Makers, Wholesale Stationers, etc.

Section 1—Actual Watermarks.

Section 2—Trade Names (not being Actual Watermarks).

Addresses of Firms—referred to under Trade Designations.

Paper Trade Customs.

Sizes of Papers.

Paper Trade Publications.

Index to Advertisers (Alphabetically)

Scale of Advertisements.

Classification of Advertisers.

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New York, N.Y.

Established 1886

COMING TO BUY PAPER.

Davies & Royle, 7 Old Swan Lane, London, E.C. 4, intend to take advantage of the freedom from restrictions on import of Canadian paper in England by developing sources of supply in the Dominion. Mr. W. A. Dewsnap, a member of the firm, is on his way to Canada with the intention of buying, and readers of the Pulp and Paper Magazine who desire to get in touch with him may address communications in care of the magazine.

Davies & Royle are about the largest importers of wrapping papers in the United Kingdom, and it is hoped that Canadian mills may find in Mr. Dewsnap's visit an opportunity to get a large share in the trade that has formerly gone to Scandinavia.

PARSONS AND WHITTEMORE MOVE.

Many pulp and paper men have known well the road to Parsons & Whittemore, in New York. They have moved to 299 Broadway, which should be more convenient to the trade than the former location on Fulton Street. The new location will be within a stone's throw of where W. H. Parsons & Company, paper merchants and manufacturers, were located fifty years ago, and where the president of the company entered that firm more than thirty years ago. The firm of Parsons & Whittemore was established on the first of July, 1908, and later was incorporated under the laws of the State of New York. The company has its own branch offices in Sydney and Melbourne, Australia; Bombay, India; Santiago, Chili; Buenos Aires; Cape Town; Havana, and has agents in all the important markets of the world; at the present time three members of its staff are travelling in Great Britain, Australia and South America; the two latter visiting the branch offices and agents of the company. The business of the company has increased very largely, which has necessitated occupying space on four floors of 174 Fulton Street, and this became very inconvenient and impracticable. That building having been acquired by the Telephone Company, who need practically the entire space for their own offices, necessitated the removal and the new offices at 299 Broadway will be very much more conveniently arranged with better light and air, having unobstructed light on three sides. Canadian pulp and paper men are invited to call.

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and at Manchester

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CORRESPONDENCE SOLICITED.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

Published every Thursday by The Industrial and Educational Press, Limited, Garden City Press, Ste. Anne de Bellevue. 'Phone 165.

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A. S. Christie, Eastern Manager.
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'Phone Main 2662.

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Toronto Office, 1402-3 C.P.R. Building.
'Phone Adelaide 3310.

Changes in advertisements should be in the Publishers' hands ten days before the date of issue.

Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

Subscription to any address in Canada, United States and British Empire, \$5.00 yearly. Other Countries Postage Extra. Single copies, 15 cents.

VOL. XVII.

GARDEN CITY PRESS, Ste. Anne de Bellevue, Que.

No. 22

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EDITORIAL

TECHNICAL TRAINING BASIS OF QUALITY.

In the Montreal papers last week reference was made to a certain statement of Dr. R. F. Ruttan, of McGill University, and the Advisory Council for Scientific and Industrial Research, before the Committee of the House of Commons, regarding the quality of Canadian pulp and paper products, Dr. Ruttan's remarks will naturally receive wide attention and be given the important consideration that they deserve. In the quotations made last week, however, an unfortunate situation arises, because it was impossible to mention more than an extract, and the extract quoted completely misrepresents the impression that the whole statement was intended to convey. The printing of the quotation referred to is likely to cause some misunderstanding of the situation. In order to convey his ideas correctly to those engaged in the Pulp and Paper Industry, a complete quotation of Dr. Ruttan's remarks so far as they relate to this industry is given.

"In Canada there is a market for a large number of well trained men. I will give you one example, though I could give you others. One of the biggest industries in this country is the manufacture of paper and pulp. We have an enormous capital invested in that industry. There are mills all the way from Labrador to British Columbia. Do you know how many Canadians there are in charge of the expert work in connection with these mills? There are only two; in fact, there was only one until quite recently, when another one was appointed. We have not trained the men, with the result that those in charge of the technical work, especially the chemists in the larger mills throughout Canada, come from Norway, Sweden and the United States. We have only one, or perhaps two, who are Canadian graduates. The question of how research should be carried on in larger industries is comparatively easily settled, because the manufacturers are all alive to it, and the paper and pulp and other large industries are asking for help. They want the men. The Shawinigan Falls Company have recently established a research laboratory to deal with four or five of their large industries there."

Someone remarked, "It might be possible, through the Central Institute, to obtain men who would be capable of doing research work in these industries," and Dr. Ruttan continued, "Yes; you might get special research men in connection with paper and pulp, but better from the Forest Products Laboratory if that is once more put on its feet by being properly staffed. The training there should begin after graduating from the university; after having received a general scientific training, specializing on the paper and pulp industry and applying their fundamental

knowledge to this industry. You could thus expect to get valuable men. The great trouble with pulp and paper in Canada is, not the quantity we are turning out—because we are turning out a tremendous lot at a big profit for the country—but that we cannot compete in the export trade with the highest grade of pulp made in England and Sweden until our pulp is many degrees better than it is to-day. That is thoroughly well recognized. While our mills are turning out a good commercial grade of pulp, authorities on this question of paper and pulp, agree that the quality of paper and pulp they are turning out is vastly inferior to the more valuable high grade paper and pulp which they produce in England, Norway, Sweden and the United States; and the reason is that they cannot obtain university men of sufficient skill and scientific training in pulp and paper technology. It is our hope to be able to provide them in the near future."

The question was asked: "Why should not the pulp and paper manufacturers establish their own industrial research laboratories as they do in the States? There are small concerns in the States conducting industrial research for the sake of their own business." Dr. Ruttan replied, "The paper and pulp industry was prepared some time ago to unite and contribute a liberal amount each year for the maintenance of research in connection with that industry. They could not come to an agreement with the Government in connection with the conditions under which they were to use the Forest Products Laboratory in Montreal. They considered employing two or three experts for research in pulp making and paying them proper salaries not two or three thousand, but five or six thousand, and to high class men to carry on the research work. It seemed impossible at the time to come to a satisfactory arrangement with the Government regarding the use of the Forest Products Laboratory."

The paragraph in the daily press reads:

"Canadian Paper Inferior."

"Dr. Ruttan remarked incidentally that the great trouble with pulp and paper in Canada is the quality being turned out—because they were turning out a tremendous lot at a big profit—Canada, he said, could never compete in the export trade until our pulp and paper are many degrees better than they are to-day. Authorities admitted, he said, that Canadian pulp and paper was vastly inferior to that turned out in England, Norway, Sweden and the United States. The reason was because of the insufficient skill and scientific training of the men who were making the pulp and paper."

There is some difference of opinion as to how far the Pulp and Paper Laboratories are to go in providing technical assistance to the industry, and there is some difference of opinion as to whether the Laboratories should be a training post from which men should en-

ter the industry or vice-versa, but there is no argument as to the immediate need of greater technical control in the production of pulp and paper.

It is possible to bend all efforts to increase the already great quantity production of our Canadian mills, and it is also possible to concentrate scientific knowledge and technical skill in raising the quality standard for our goods. No doubt both of these methods must be followed by our industry. The first is necessary in order to reduce overhead charges and by mechanical efficiency produce the goods at the lowest possible cost. This line of action is already being pursued by some of our mills with considerable success. The need of quality standards has not been so apparent, but those who look forward to the future of Canadian goods in the world's markets realize that we are falling far short of our possibilities, and that we cannot begin too soon to build up a reputation for quality. Only last week we had occasion to compare samples of paper from a number of Canadian mills, with samples of the same grade of paper from typical mills in the United States, and it must be admitted that in most cases there was a very considerable difference in the character of the product. Even in taking pains to match up widths and speeds of machines, the cleanness, formation and finish of the sheet was in most instances distinctly in favor of the American paper. Probably no complaint had ever reached any of these Canadian mills from the publishers regarding the appearance of the paper, because for the last few years most publishers have been glad to get anything that would run through the presses and hold together till sold on the newsstands. One of two things is bound to happen, however, in the future of newsprint quality. Either the publisher and the public will accept paper of comparatively poor quality, or the increase in production, of which we are beginning to see preliminary signs, will introduce a period of competition in which quality will play an important part. Some newspapers will no doubt continue to print the "latest" on almost anything in the shape of paper, but there are others more discriminating who will demand an article of attractive appearance. For mills who cater to this market it will pay to take pains.

Newsprint, of course, is the major product of our Canadian mills, but is by no means the only one, as will be appreciated when we consider that in the year 1917 we exported more than 500,000 tons of pulp valued at \$26,000,000, of which \$19,000,000 represented chemical pulp and the balance groundwood. It is probable that the consumer of pulp is even more particular as to quality than the consumer of paper would be, especially the consumer of chemical pulp. It is only within the past few years that Canadian mills have considered the possibilities in the production of high grade pulps, and there are not many companies who can be said to produce what even pretends to be

a really first class article. Even with the effort that has been made by these concerns to improve the quality of their product, the standard by which Canadian pulp is judged cannot truthfully be said to compare with the best that is made elsewhere. It is in this high grade product that Canada's future largely lies, and it is toward excellence that she must strive. The fault cannot be laid entirely to the lack of technical men either in the pulp or paper mills, since there are occasional instances of the blocking of progress by the "just get by" policy of the management. There can hardly be anything more discouraging to an enthusiastic conscientious technical man than to have his recommendations set aside or deliberately disregarded.

We agree heartily with Dr. Ruttan that there is a great dearth of technical men capable of solving the problems of the Pulp and Paper Industry, and we also agree with him that the standard of quality for Dominion products is not what it should be, and that this is largely due to lack of technical advice and scientific control. We are sure, however, that progress cannot be made until the management of our mills wake up to the realization of the need for technical advice, and the universities take more deliberate action toward training men for industrial work and the Government undertakes the maintenance of such institutions as can properly carry out the investigation of problems too large for the plant laboratory. The training of the researchers is one of the very important steps in such a program, and one in which the Government can well serve the country by setting the example of making research positions of greater value and so of greater service.

We should not interpret Dr. Ruttan's remarks as meaning that the Canadian Pulp and Paper Industry is barred from competition in the world's markets. Let us rather study the matter honestly and see whether we are not laboring under the severe handicap of lower manufacturing standards of quality than other countries, and make an earnest effort to make better pulp and paper than anybody else. If Canada is going into the race for world trade, let's get on a quality basis. Caulked boots are just the thing on a log drive, but we shall need regular running shoes on the cinder track. The world knows that Canada can produce the quantity. The best quality can be made, too, if the right effort is made to do it. The brains of technical men must be used.

How much better it would have been if the paper mill strike had been settled before it began. A real understanding can almost always be more easily reached over a cigar than under a club.

Many paper men will learn with deep regret of the death of Hugh Pomeroy Blackinton, treasurer of the Noble & Wood Machine Co., on April 28th.

The Importance of Testing Building Materials

By EMMANUEL MAVAUT, Concrete Expert, of
Milton Hersey Company, Limited, Engineers
and Chemists, Montreal.

One often wonders why it is that so many engineers and architects seem adverse to having their building and structural materials inspected and tested before accepting them for use in their work. Too often this is omitted during the construction of high priced dams, bridges, breakwaters, office buildings, theatres, etc., where the professional reputation of the engineer or architect, the capital of the inventor, and, quite frequently, the lives of many people are at stake.

Is it through ignorance? Is it through jealousy and selfishness; not wanting any other engineer or chemist to share the credit for the appearance or assured safety of the structure? Or is it through a mistakenly economical point of view? We will review these points one by one.

Is it through ignorance? I may answer that in quite a few cases it is. Engineers of high standing have deliberately claimed to me that it was not necessary to test anything; using as an argument that cement was standard, that any experienced man could tell good sand at sight, and that, as far as stone was concerned, limestone was limestone, and that was all there was to it.

These men start the work without knowing the quality of the materials they are using; and, too frequently, their structures fail. If it is concrete, the mass crumbles, disintegrates, cracks, or otherwise goes to pieces, and the average person who sees it concludes that, after all, concrete is a poor investment.

Let us review the arguments of these engineers. They claim that cement is standard. I say it is not; though I know the cement manufacturers, especially the larger ones, do all in their power to have the cement not only up to specifications, but as near perfect as practically possible. But the chemist and superintendent can not be all over the works at once; and, for that reason, there is always a possibility, though it may be remote, of the cement coming out too fresh, too high in sulphuric anhydride, or in magnesia, or too low in specific gravity.

These defects, which can not be found without having the cement tested, will cause many different troubles in concrete work. For instance, one defect will cause the cement to set too quickly; that is, it will take its initial and sometimes its full set before being placed on the job, or, in other words, while the men are mixing it. In this case, there will be no cementitious qualities between the different lumps of concrete as it breaks up when being deposited, and so many stones covered with mud might just as well be thrown into the forms; the result would be as good.

On the other hand, another defect might cause the concrete to set too slowly. This naturally retards the work, because the forms can not be taken off as quickly as planned. If the risk is taken and the forms removed, there is a great possibility of the structure failing. If slow setting cement is used in

the winter time, and freezes before it sets, the concrete will soon disintegrate. Even if it should not totally collapse, it will be a constant cause of expense for repairs and an ever-present eyesore.

I had occasion, some time ago, to condemn eighteen cars of cement containing over 16,000 bags, and amounting to over \$11,000 in value. These eighteen cars, which had been purchased by two of our largest Canadian manufacturing firms, were condemned for the reason that the setting took place in from eight to twenty minutes. It should take at least one hour, as determined by the Gilmore needle. Had not that cement been tested, it would naturally have been used, and, without a doubt, the work would have failed because of the concrete setting before being placed.

Outside of this particular case, I have had occasion to condemn cement quite a few times in different parts of the country. In the majority of cases, the cement manufacturer was not to blame for these failures in cement, but either the railway company or the contractor was responsible. Cement is often stored in unsuitable sheds where dampness and rain injure it. How many of us have not seen bags that were set as hard as rocks taken out of temporary storage sheds? In such an instance, while only certain bags may be usable, many others, and frequently a very large quantity, have been affected to such an extent that they should not be used.

Another instance came to my personal attention last summer. An electric power development company situated in the Province of Quebec, were about to raise their dam. The cement was purchased and stored beside the falls in an enclosure with no front. After this was filled with cement, a few boards were put up to protect the cement from the spray of the falls; but cracks ranging from one to ten inches were in evidence. The result was that the spray reached many of these bags of cement, making some of them so hard they had to be broken up with shovels before using. I drew the attention of the superintendent to this fact, but his answer was that the cement was first class.

It stands to reason that had this cement been tested before using it would certainly have been condemned, as chemical action had already taken place, rendering it of little value. This is but one of the many cases where the cement company was not to blame, and similar instances occur almost daily; but, whether the manufacturer or the contractor is responsible, if the cement is not tested, and the work supervised by an experienced concrete inspector, the investor is likely to suffer.

Now let us go into the sand question. It is claimed that any engineer or experienced man can tell good sand at a glance. That is impossible. He may be able to tell that it is too fine, if it is very much too fine, or too dirty, if it is very much too dirty; but, beyond that, there are no engineers or experienced men who can tell at sight whether this sand or that is

good and reliable for strong and dense concrete work.

All sand contains more or less silt or dirt. The reason for this is that it is composed of small particles of broken rock, of different sizes and compositions, coming from different parts. These particles have been washed away or transported from their different sites at different times and settled in layers of different thicknesses in what is now a workable sand bank or deposit. Therefore, there is no guarantee or even likelihood of uniformity, and one earload of sand may be first class and the next of very poor grade for concrete work. Also the dirt and silt, which is very injurious to sand for concrete purposes, are bound to be present in some parts of the sand bank; because the small particles of rock that are washed towards the bank will naturally carry with them more or less of this fine material.

The above shows conclusively that, in order to be sure of good results, the sand should be tested; not only once, but continually while the work is in progress.

Besides the avoidance of injurious silt, there is the size or grading of the sand to be considered. It should be well graded, having a certain proportion retained on each sieve from, say, the eighty mesh to the one-quarter inch sieve. If all of the sand grains are of nearly the same size, the voids will be too great, and, unless an additional amount of cement is used, the voids will not be filled. If too fine, the concrete will not be of the required strength. The reason for having sand well graded is so that the fine particles will fill the voids of the coarser particles, thus reducing them to a minimum.

In order properly to proportion a concrete mixture, it is necessary to determine the voids; for, without this information, the engineers are working blindly and probably wastefully. Where they are figuring on having a good dense concrete for a reservoir, or oil tank, or foundation, the result is apt to be different; and, if the water goes through the wall, concrete once more gets a black eye.

Another very bad fault in some sands, which can not be determined without testing, is that they contain injurious chemicals. Sometimes the drainage from some industrial plant such as a chemical works, soap factory or tannery, though located several miles away, will contaminate a sand supply, rendering it unfit for use in making concrete. As a rule, such contamination is discovered by making three-to-one briquettes with the sand under consideration, and also with standard sand. A comparison of the results will soon tell whether or not there are injurious chemicals present.

Some years ago, I had occasion to deal with a very interesting case of the above type. A company decided to build a concrete laundry building in Eastern Ontario on the site where an old stable had been standing for years. They tore down the old building; and, in excavating for the cellar of the new, ran across such nice looking sand that they decided to use it in the concrete mixture for the new structure. They had no end of trouble. The concrete would not set, and the walls fell in.

In carrying out an investigation, it was found that briquettes made of this sand would crumble in the hand after seven days' setting. These briquettes were so disintegrated that they could not even be put in the machine to test. An analysis was made, and we

found that the sand was saturated with ammonia which had percolated through from the horse manure.

As a result of this investigation, the sand had to be taken away from the site of the work, the old concrete thrown out, forms rebuilt, new sand purchased, and the work reconstructed. All this delayed the work, cost money for material and labor to replace that wasted, and inconvenienced the owners. A sensible program of testing would have prevented any of this trouble.

I would venture to say that three-quarters of the failures in concrete are due to poor sand; and then some engineers will not hesitate to state that it is unnecessary to have sand tested.

As far as stone is concerned, the same argument holds as in the case of sand. In order to regulate the mixing of concrete, the voids must be determined; and, in order to get good results, the stone must be clean, strong, well shaped and well graded.

It might well be stated that the best argument for the general inspection and testing of all building and structural materials is that every large corporation such as the Canadian Pacific, the Grand Trunk, the Canadian National Railways, the Montreal Tramways, the Montreal Light, Heat and Power Company, the Harbor Commissioners of Montreal, Toronto, Hamilton, London, Peterborough, the Departments of the Government, provinces, states, the counties and municipalities that are at all progressive, and large private concerns too numerous to mention, all have their materials thoroughly tested before using. The sooner other engineers and architects make up their minds to have testing and construction supervised by experienced men, the sooner eyecores, failures and constant repairs to concrete work will stop.

Is it through selfishness? I happened to interview the City Engineer of one of the larger cities of Canada on the subject of supervising concrete construction, and the testing of materials for same. After a long conversation, he agreed that the construction materials should be tested, but turned around and said: "Where do we come in? You will be the one doing the work, and getting the credit. The Municipal Council will say, 'These engineers of ours are no use if they must get their materials tested and work supervised.' If we were to do that, we might find ourselves out of a job." Whether it is the effect of the above policy or not it is hard to say; but this particular city has had constant trouble and very heavy expenditures for replacing defective work; which expenditure has, of course, fallen upon the tax payer. They erected a Fat Stock Show building, and the whole thing collapsed. Their water main cracked, and, as it was a suction system, sewage, polluted water, and so forth, was sucked into the mains and contaminated the drinking water. This caused a typhoid fever epidemic that carried off in the neighborhood of a thousand people, and forced the city to open emergency hospitals that it had to furnish and provide with doctors, nurses and orderlies. The boiler in one of their municipal buildings exploded, killing one man, injuring others, and wrecking the building. A pavement about twenty-five city blocks in length took on the form of a corrugated road and had to be relaid a few years after it was first put down.

It goes without saying that all this trouble cost the city many thousands of dollars; which expense might, and very likely would have been avoided had

all the materials used in these constructions been tested and the work supervised by some one particularly familiar with each type of construction. Any possible loss of prestige to an engineer or architect through the employment of outside specialized inspection and testing could not conceivably injure him as much as one such failure as we have mentioned. In fact, after the failure, some one will ask why he did not have knowledge enough to understand that he needed such specialized service. The family physician does not try to operate on his patient's heart; the Plant Engineer should not think it necessary to pretend that he knows it all, either; and the same applies to the outside engineer or architect. Specialists usually pretend to know but one thing, but to know that one thing uncommonly well.

Is it through an economical point of view? With some engineers and architects it is. A good many of them will say that this or that work is not of sufficient importance, or will not be seen, so spending money on tests for it is wasting. This is very unwise economy; in fact, not economy at all. It is a case of saving the pennies to throw away the dollars; for, when the construction materials are tested and accepted by specialists, and the work supervised by them, the engineer or architect is practically relieved of all responsibility except that of having selected competent specialists to do the work. He can not do all this himself. He must hire some one; so why not those particularly competent to take care of the particular matter for him?

Besides, if his plans and specifications are correct, he is sure there will be no unwarranted expense for repairs, and the structure will be there to stay as a monument to his name and a foundation for his future reputation in the engineering profession.

The engineers and architects who are foremost in their professions would not consider for a moment the proposition to have their plans and specifications executed without full inspection and testing as the work progressed; therefore, why should men who have not yet reached the pinnacle of professional success risk failures that might forever preclude their arrival?

A TOW BOAT BUILT TO LAST.

The Powell River Company are having a tow boat built by the W. R. Menchions, of Vancouver, B.C., that is constructed especially for their wants. The idea has been to have a boat that will stand up under all conditions.

The boat is 50 feet over-all; 13 feet beam; 6 feet draught, and is powered with a 75 H.P. Type C. O. Fairbanks-Morse semi-Diesel oil burning engine.

The boat will be reinforced to stand a lot of hard knocks. It is kneeed with hanging knees, and has two sets of pointers in the box. All clamps, guards, and shelf are of one piece from end to end. This means that some of the pieces are 56 feet long. All joints are creosoted, and she is salted from the bilge up.

It is expected that the boat will be finished by the first of July. The idea has been not to spare expense, but to build a boat that will stand up to the work required of it, and last.

LITTLE THINGS CAUSE SERIOUS DAMAGE.

By ROBERT HACKETT.

Superintendent of Sulphite Mill, Spanish River Pulp and Paper Mills, Ltd.

A great deal of damage and a great many accidents may occur because workmen do not think. On October 20th the construction crew at the Soo began the erection of Blowpit stack directly above the cooler in the Sulphite Mill. Evidently the men who went to work in this tower did not use their thinking power, as they let the timber drop a distance of 70 or 80 feet on the new and expensive cooler that had just been completed. The cooler was damaged so that it took considerable time to repair but this was small compared with the after effects. Some of the workmen started to think when it was too late and covered the cooler with dryer felt, covering the lead pipes so the acid maker could not see the damage done. The result was pitch in the Sulphite pulp. The acid dropped way below what is generally used for cooking. Among the many causes of pitch may be mentioned air leaks in the pipes leading to the coolers, and the precipitation of calcium monosulphite in the pulp. When the timber was dropped on the cooler the lead pipe broke allowing air and water to mix with the gas. The air changed some of the SO₂ gas into SO₃ which caused calcium sulphate to be formed when it came in contact with the limestone and water in the towers. This calcium sulphate carried in suspension in the acid, unites with the resins of the wood forming a sticky mass called pitch. On the other hand the air leak dilutes the gas and a weaker acid is made which causes some calcium monosulphite to be precipitated in the pulp and this also unites with the resins of the wood causing pitch. The pitch makes the screens in the paper mill work hard, causes numerous breaks on the machine and is the cause of a great many delays to the paper machine. The pitch is also very hard on the wires and clothing of the machine, all of which are very expensive at the present time. The damage that follows runs into thousands of dollars to say nothing about the discouraging hard work done by the machine help, all caused by the carelessness of a few mechanics. They did not do it intentionally but before starting a new task Stop, Look and Think. Try to avoid accidents and damage to machinery as well as men.—Spanish River News.

WILLOW WOOD USED TO MAKE SOUTH AMERICAN PULP.

Wood pulp is being made in Argentina from a mixture of poplar and willow, according to B. S. Webb, Canadian trade commissioner in Buenos Aires. At first attempts were made to manufacture sulphite pulp locally from the Araucaria pine, but these attempts did not give commercially successful results. Then the Fabrica de Pape El Fenix installed a plant for making pulp from the willow and poplar trees which grow abundantly on the island, which form the delta of the River Platte.

Under present conditions the price of this mixture enables newsprint to be manufactured locally at a cost which is nearly as low as the landed cost of imported roll newsprint, and considerable quantities have been turned out during the year, but the business has not been found to be profitable and the output of the pulp plant is now being used for the making of flat newsprint, wrapping, paper bags, etc.

Analysis of Coal

(Concluded from last issue.)

Blanks and Corrections.—In all cases a correction must be applied either (1) by running a blank exactly as described above, using the same amount of all reagents that were employed in the regular determination, or more surely (2) by determining a known amount of sulfate added to a solution of the reagents after these have been put through the prescribed series of operations. If this latter procedure is adopted and carried out, say, once a week or whenever a new supply of a reagent must be used, and for a series of solutions covering the range of sulfur content likely to be met with in coals, it is only necessary to add to or subtract from the weight of barium sulfate obtained from a coal, whatever deficiency or excess may have been found in the appropriate "check" in order to obtain a result that is more certain to be correct than if a "blank" correction as determined by the former procedure is applied. This is due to the fact that the solubility error for barium sulfate, for the amounts of sulfur in question and the conditions of precipitation prescribed, is probably the largest one to be considered. Barium sulfate is soluble in acids and even in pure water, and the solubility limit is reached almost immediately on contact with the solvent. Hence, in the event of using reagents of very superior quality or of exercising more than ordinary precautions, there may be no apparent "blank," because the solubility limit of the solution for barium sulfate has not been reached or at any rate not exceeded.

As shown in the preliminary report,² the Atkinson and sodium peroxide methods give results in close agreement with the Eschka method. Regester³ has shown that if 5 per cent of nitrogen is present in the gases contained in the bomb calorimeter the sulfur

The permissible differences in duplicate determinations are as follows:

	Same Analyst P.C.	Different Analysts P.C.
Sulfur over 2 per cent . . .	0.10	0.20
Sulfur under 2 per cent . .	0.05	0.10

¹ J. Am. Chem. Soc., 32 (1910), 588; 33 (1911), 829.

² This Journal, 5 (1913), 524.

³ Ibid., 6 (1914), 812.

Determination of Phosphorus in Ash (Omitted).

Calorimetric Determination. Apparatus.

Combustion Bombs.—The Atwater, Davis, Emerson, Mahler, Parr, Peters, Williams, or similar bombs may be used. The bomb shall have an inner surface of platinum, gold, porcelain enamel, or other material which is not attacked by nitric and sulfuric acids, or other products of combustion.

Calorimeter Jacket.—The calorimeter must be provided with a water-jacket having a cover to protect the calorimeter from air currents. The jacket must be kept filled with water within 2° or 3° C. of the temperature of the room except in calorimeters which are totally submerged, where the jacket temperature is controlled by a thermostat and should be stirred continuously by some mechanical stirring device.

Stirring of the Calorimeter Water.—The water in the calorimeter must be stirred sufficiently well to give consistent thermometer readings while the temperature is rising rapidly. The speed of stirring should be kept constant. A motor-driven screw or turbine stirrer is recommended and the speed should not be excessive. This may be determined by adjusting the temperature of the calorimeter to equality with that of the jacket and allowing the stirrer to run continuously for ten minutes. If the temperature of the calorimeter rises more than about 0.01° C. in this length of time, the rate of stirring is excessive. Accurate results cannot be obtained when too much energy is supplied by the stirring device or when the rate of stirring is irregular. The portion of the stirring device immersed in the calorimeter should be separated from that outside by nonconducting material, such as hard rubber, to prevent conduction of heat from the motor or outside air.

Thermometers.—Thermometers used shall have been certified by a government testing bureau and shall be used with the corrections given on the certificate. This shall also apply to electrical resistance or thermo-electric thermometers. Corrections shall also be made for the temperature of the emergent stem of all mercurial thermometers, and for the "setting" of Beckmann thermometers. For accurate work, either Beckmann or special calorimetric thermometers graduated to 0.01 or 0.02° C. are required. Such thermometers should be tapped lightly just before each reading to avoid errors caused by the sticking of the mercury meniscus, particularly when the temperature is falling. A convenient method is to mount a small electric buzzer directly on the top of the thermometer and connect it up with a dry cell and a push button. The button should be pressed for a few seconds immediately before each reading.

Oxygen.—The oxygen used for combustion shall be free from combustible material. The bomb when filled should contain at least 5 per cent of nitrogen to insure complete oxidation of the sulfur.¹ The total amount of oxygen contained in the bomb for a combustion shall not be less than 5 g. per gram of coal. But the combustion must be complete, as shown by the absence of any sooty deposit on opening the bomb after firing.

Firing Wire.—The coal in the bomb may be ignited by means of either iron or platinum wire. If iron wire is used, it should be of about No. 34 B. & S. gauge and not more than 10 cm. (preferably 5 cm.) should be used at a time. A correction of 1600 calories per gram weight of iron wire burned is to be subtracted from the observed number of calories.

Standardization.—The water equivalent of a calorimeter can best be determined by the use of the standard combustion samples supplied by the Bureau of Standards. The required water equivalent is equal to the weight of the sample multiplied by its heat of combustion per gram and divided by the corrected rise in temperature.

The calorimeter shall be standardized by the combustion of standard samples supplied by the Bureau

¹ Regester, This Journal, 6 (1914), 812.

of Standards and used according to the directions given in the certificates which accompany them. A standardization shall consist of a series of not less than five combustions of either the same or different standard materials. The conditions as to the amount of water, oxygen, firing wire, method of correcting for radiation, etc., under which these combustions are made shall be the same as for coal combustions. In the case of any disagreement between contracting parties a check standardization may consist of two or more combustions of standardizing samples.

Manipulation.

(1) **Preparation of Sample.**—The ground sample is to be thoroughly mixed in the bottle and an amount, approximately 1 g., is to be taken out and weighed in the crucible in which it is to be burned. Coals which are likely to be blown out of the crucible should be briquetted. After weighing, the sample should preferably be immediately placed in the bomb and this closed. This procedure is necessary to avoid sublimation in the use of naphthalene for standardization.

(2) **Preparation of the Bomb.**—The firing wire, if iron, should be measured and coiled in a small spiral and connected between the platinum terminals, using, if necessary, a piece of platinum wire somewhat heavier than the iron wire, to make the connection. The platinum and the iron must both be clean. About 0.5 cc. of water should be placed in the bottom of the bomb to saturate with moisture the oxygen used for combustion. When the crucible is put in place in the bomb, the firing wire should touch the coal or briquette of standard material. For the combustion of standardizing samples iron wire is preferable to platinum.

(3) **Filling the Bomb with Oxygen.**—Oxygen from the supply tank is to be admitted slowly to avoid blowing the coal from the crucible, and pressure allowed to reach 20 atmospheres for the larger bombs or about 30 atmospheres for the smaller bombs, so that the bomb shall contain an amount of oxygen sufficient for complete combustion, namely, at least 5 g. per gram of coal, or other combustible. This method of filling will insure 4 per cent of nitrogen in the larger bombs, irrespective of the nitrogen contained in the oxygen.

(4) **Calorimeter Water.**—The calorimeter is to be filled with the required amount of distilled water, depending upon the type of calorimeter. The amount may be determined either by measurement in a standardized flask or by weighing. The amount must be kept the same as that used in standardization of the apparatus.

(5) **Temperature Adjustments.**—The initial temperature in the calorimeter should be so adjusted that the final temperature, after the combustion, will not be more than 1° C., preferably about 0.5° C., above that of the jacket, under which conditions the total correction for heat gained from or lost to the surroundings will be small when the rise of temperature is 2° or 3° C., and the effect of evaporation will also be small.

(6) **Firing Current.**—The electric current used for firing the charge should be obtained from storage or dry cells having an electromotive force of not more than 12 volts, since a higher voltage is liable to cause an arc between the firing terminals, introducing additional heat, which cannot be measured with certainty. The circuit should be closed by means of

a switch, which should remain closed for not more than 2 seconds. When possible, it is recommended that an ammeter be used in the firing circuit to indicate when the firing wire has burned out.

(7) **Method of Making an Observation.**—The bomb, when ready for firing, is to be placed in the calorimeter, the firing wires connected, the cover put in place and the stirrer and thermometer so placed as not to be in contact with the bomb or container. The stirrer is then started, and after the thermometer reading has become steady, not less than 2 minutes after the stirrer is started, temperatures are read at 1-minute intervals for 5 minutes, and the charge is then fired, the exact time of firing being noted. Observations of temperature are then made at intervals, depending upon the method to be used for computing the cooling correction. When the temperature has reached its maximum and is falling uniformly, a series of thermometer readings is taken at 1-minute intervals for 5 minutes to determine the final cooling rate.

(8) **Titration.**—After a combustion the bomb is to be opened, after allowing the gas to escape, and the inside examined for traces of unburned material or sooty deposit. If these are found, the observations shall be discarded. If the combustion appears complete, the bomb is to be rinsed out thoroughly and the washings titrated with a standard alkali solution (1 cc. = 0.02173 g. HNO₃ = 5 calories), using methyl orange or methyl indicator, to determine amount of acid formed. A correction of 230 calories per gram of nitric acid should be subtracted from total heat observed. An additional correction of 1300 calories per gram of sulfur in the coal should be made for the excess of difference in heats of formation of SO₂ and aqueous H₂SO₄ over the heat of formation of aqueous HNO₃.

The following method of computation is recommended to take the place of the Pfundler or other similar formulas for computing the cooling correction (radiation correction).

Observe (1) the rate of rise, r_1 , of the calorimeter temperature in degrees per minute for 5 minutes before firing; (2) the time, a , at which the last temperature reading is made immediately before firing; (3) the time, b , when the rise of temperature has reached six-tenths of its total amount (this point can generally be determined by adding to the temperature observed before firing, 60 per cent of the expected¹ temperature rise, and noting the time when

¹ When the temperature rise is not approximately known beforehand, it is only necessary to take thermometer readings at 40, 50, 60 seconds (and possibly 70 seconds with some calorimeters) after firing, and from these observations to find when the temperature rise had reached 60 per cent of the total. Thus, if the temperature at firing was 2.135°, at 40 seconds 3.05°, at 50 seconds 3.92°, at 60 seconds 4.16°, and the final temperature was 4.200°, the total rise was 2.07°; 60 per cent of it was 1.24°. The temperature to be observed was then 2.14° + 1.24° = 3.38°. Referring to the observations at 40 and 50 seconds, the temperatures were respectively 3.05 and 3.92°. The time corresponding to the temperature of 3.38° was therefore

$$40 + \frac{3.38 - 3.05}{3.92 - 3.05} \times 10 = 44 \text{ seconds.}$$

this point is reached; (4) the time, c , of a thermometer reading taken when the temperature change has become uniform some 5 minutes after firing; (5) the final rate of cooling, r_2 , in degrees per minutes for 5 minutes.

The rate r_1 is to be multiplied by the time $b - a$ in minutes and tenths of a minute, and this product added (subtracted if the temperature was falling at the time a) to the thermometer reading taken at the time a . The rate r_2 is to be multiplied by the time $c - b$, and this product added (subtracted if the temperature was rising at the time c and later) to the thermometer reading taken at the time c . The difference of the two thermometer readings thus corrected, provided the corrections from the certificate have already been applied, gives the total rise of temperature due to the combustion. This multiplied by the water equivalent of the calorimeter gives the total amount of heat liberated. This result, corrected for the heats of formation of HNO_3 and H_2SO_4 observed and for the heat of combustion of the firing wire, when that is included, is to be divided by the weight of the charge to find the heat of combustion in calories per gram. Calories per gram multiplied by 4.8 give the British thermal units per pound. (See example.)

The Permissible differences in duplicate determinations are as follows:—

Same Analyst.	Different Analysts.
0.3 Per cent.	0.5 Per cent

In practice, the time $b - a$ will be found so nearly constant for a given calorimeter with the usual amounts of fuel that b need be determined only occasionally.

The results should be reduced to calories per gram or British thermal units per pound of dry coal, the moisture being determined upon a sample taken from the bottle at about the same time as the combustion sample is taken.

Example.

Water equivalent = 2550 g.
 Weight of charge = 1.0535 g.
 Approximate rise of temperature expected = 3.2° .
 60 per cent of approximate rise = 1.9° .

Observations	Thermometer Readings	Corrected Temperature (or corrected Beckmann thermometer readings.)
10—21	15.244	Thermometer corrections taken from the certificate
22	0.250	
23	0.255	
24	0.261	
25	0.266	
26a	0.272	15.276
Charge fired		
27.2b	17.2	
31	18.500	18.497
32	0.498	
33	0.497	
34	0.498	
35	0.494	
36	0.493	

The initial temperature is 15.27° ; 60 per cent of the expected rise is 1.9° . The reading to observe is then 17.2° .

Computation.

$r_1 = 0.028^\circ$	$\div 5 = 0.0056$	
per min.	$\times b - a = 3.8$ min.	
The corrected initial temperature is		
15.276	$\div 0.0056 \times 1.2$	$= 15.283^\circ$
$r_2 = 0.007^\circ$	$\div 5 = 0.0014$	
per min.	$\times c - b = 3.8$ min.	
The corrected final temperature is		
18.497	$\div 0.0014 \times 3.8$	$= 18.502^\circ$
Total rise is $18.502 - 15.283$		$= 3.219^\circ$
Total calories 2550×3.219		$= 8209$
Titration, etc.		$= 7$
		<hr/>
Calories from 1.0535 g. coal		8202
Calories per Gram		7785
or, British Thermal Units per lb.		14013

The result obtained by the above method of computation and determination is the total heat of combustion at constant volume, with the water in the products of combustion condensed to liquid at the temperature of the calorimeter, that is, about 20 to 35° C.

Net heat of combustion at 20° shall refer to results corrected for latent heat of vaporization, as follows:

Total Heat of Combustion in B. t. u. — 1040 (% Hydrogen $\times 9$) = Net Heat of Combustion in B. t. u. per Pound.

Also

Total Heat of Combustion in Calories — 580 (% Hydrogen $\times 9$) = Net Heat of Combustion in Calories per Gram.

NOTES—For anthracite, coke and coal of high ash content, which do not readily burn completely, the following procedure is recommended: The inside of the crucible is lined completely with ignited asbestos in a thin layer pressed well down into the angles. The coal is then sprinkled evenly over the surface of the asbestos. Otherwise the procedure is as previously described.

The method of computing the "cooling correction" described in Technical Paper No. 8, Bureau of Mines, pages 28 to 32, may also be used.

NEW PLANT OF THE BEAVER COVE LUMBER & PULP COMPANY NEARING COMPLETION.

Situated 175 miles from Vancouver, on the East Coast of Vancouver Island, near Alert Bay, the Beaver Cove Lumber and Pulp Company, Ltd., are now erecting a million dollar plant that will be right up to the minute when completed, which will be some time during July.

There will be three departments to the plant, the pulp mill, lumber mill and shingle mill. The pulp mill is so laid out that a total of five units may be erected as required.

When completed these mills will be capable of turning out: 40 tons of pulp per day; 125,000 feet of lumber per day; 180,000 shingles per day.

For the present the company are purchasing logs, but as soon as the plant is completed the company will build a railroad into their own timber holdings, of which there are five billion feet right behind them.

The direct management of the plant will be under Mr. W. H. White, President and General Manager, assisted by Mr. W. O. King, 1st Vice-President and Treasurer, and Mr. George C. Pratt, Secretary.

From all indications this bids fair to be one of the most representative enterprises of its kind in British Columbia.

Census of Pulp and Paper Industry, 1917

(Continued from last issue.)

AGENCIES OF PRODUCTION—(2) EMPLOYEES, SALARIES, WAGES, AND WORKING TIME.

Tables XVI, XVII, XVIII, and XIX, present the data of the report under the above headings. In Table XVI a general review is given of the numbers of persons, male and female, employed on salaries and on wages by classes of employment, together with total wages and salaries. A comparison by classes of employment between the returns of 1917 and 1915 is as follows:—

	Total salaries and wages		
	Male No.	Female No.	wages \$
Officers, superintendents and managers...	1917 384	5	1,280,191
	1915 346	17	1,042,563
Clerks, stenographers, salesmen, etc.	1917 961	213	1,288,821
	1915 626	142	728,475
Employees on wages ..	1917 20,730	672	17,789,007
	1915 13,512	665	8,693,361

The average salary of officers, superintendents and managers advanced from \$2,872 in 1915 to \$3,291 in 1917, or an increase of 14.6 per cent.; that of clerks, stenographers and salesmen from \$948 in 1915 to \$1,098 in 1917, or a per cent. increase of 15.8. The average wages of employees in all mills increased from \$613 in 1915 to \$831 in 1917, or an increase of 35.5 per cent. The greatest amount of employment is found in the combined mills, being 66.4 per cent. of the total employed in the industry.

Table XVII shows the number of employees by months of the year. The months of highest and lowest employment vary according to province. The highest number employed in pulp mills is in the months April-August, and the lowest in the month of January and February. In pulp and paper mills the range is from July-November for the highest and from January-April for the lowest. The variation in paper mills is not so marked as in the case of the other classes of mills, as is shown by the slight deviation of the monthly returns from the averages for the whole year.

Table XVIII affords an opportunity to note the rise in wages incidental to the increased cost of living, compared with the statistics of classified weekly wages taken in 1915. A comparative statement for the years 1915 and 1917 is given below: it shows that of the

13,287 employees on wages in 1915, the number receiving less than \$10 per week was 4,888 or 36.8 per cent., while in 1917 there were only 1,546 who received less than \$10 per week, or 7.1 per cent. Those receive-

Table XVI.—Employees, Salaries and Wages by Classes of Mills for the Provinces, 1917, (Abbreviated.)

Canada.	All mills.		\$
	Males.	Females.	
Officers, Superintendents & managers	384	5	1,280,191
Clerks, Stenographers and other salaried employees	961	213	1,288,821
Employees on wages	20,730	672	17,789,007
Total salaries and wages	22,075	890	20,358,019

Table XVII.—Employees by Months for Classes of Mills by Provinces, 1917 (Omitted.)

Table XVIII.—Classified Weekly Wages by Provinces and Classes of Mills, 1917, (Abbreviated.)

Canada:	All mills.	
	16 yrs. of age and over	Under 16 yrs. of age.
Under \$3 . . . . .	..	..
\$3 but under \$4	38	8
\$4 but under \$5	24	17
\$5 but under \$6	44	84
\$6 but under \$7	72	141
\$7 but under \$8	114	112
\$8 but under \$9	122	95
\$9 but under \$10	477	108
\$10 but under \$12	1,331	50
\$12 but under \$15	5,595	14
\$15 but under \$20	8,117	6
\$20 but under \$25	3,119	..
\$25 and over	1,904	1

receiving more than \$10, but less than \$15 per week number 5,877 in 1915 or 44.3 per cent. of the whole, as against 6,999 in 1917, or 32.2 per cent. Those receiving \$15 per week, but less than \$20 numbered 1,564 in 1915

Comparative Table of Classified Weekly Wages, 1917

	1917			1915		
	Male	Female	Under 16 years	Male	Female	Under 16 years
Under \$4	38	8	2	36	88	109
\$4 but under \$5	24	17	9	29	98	13
\$5 but under \$6	44	84	13	48	195	16
\$6 but under \$7	72	141	27	240	136	34
\$7 but under \$8	114	112	19	245	567	7
\$8 but under \$9	122	95	3	220	1,205	16
\$9 but under \$10	477	108	17	602	1,915	3
\$10 but under \$12	1,331	50	9	1,390	3,343	3
\$12 but under \$15	5,595	14	..	5,609	2,539	..
\$15 but under \$20	8,117	6	7	8,130	1,563	1
\$20 but under \$25	3,119	..	..	3,119	546	..
\$25 and over	1,904	1	..	1,905	402	..
Totals	20,957	635	106	21,699	12,451	652
						184
						13,287

418 per cent. as against \$130 in 1917 or 37.5 per cent. Those receiving \$20 per week but less than \$25 numbered 546 in 1915 or 4.1 per cent., as against 3,119 in 1917 or 14.4 per cent. Those receiving more than \$25 per week were 402 in number in 1915 or 3 per cent., as against 1,905 in 1917 or 8.8 per cent.

The average weekly wage of all employees irrespective of age or sex was approximately \$15.76 in 1917, and \$13.12 in 1915; an increase of \$2.34 per week or 17.4 per cent.

Table XIX shows the averages of working time per year, per week and per shift for each class of mills. It will be seen that in all Canada combined mills operated the greatest number of days in the year, namely 295.9, followed by paper mills and pulp mills in the order named. The hours per shift and per week were greatest in pulp mills, followed by combined mills and paper mills respectively. Table XIX (omitted here) presents these statistics by provinces and for the Dominion.

Transportation Topics

NEW ARRANGEMENTS FOR PRE-PAYMENT OF FREIGHT.

The Transportation Department of the Canadian Manufacturers' Association sent out last week Circular No. 189, which reads as follows:

We have just received from the Canadian Railway War Board Circular No. 107, dated Montreal, May 6th, embodying new regulations for the extension of credit for payment of freight charges.

The Bond requirement, as contained in Circular No. 97, does not appear in the new circular. Credit will be extended to financially responsible firms who fill out the application for credit and agree to pay accounts within the prescribed time. All bills or accounts rendered within the periods mentioned below must be paid on or before the dates shown opposite:

From 1st to 7th of each month—on or before 14th of that month.

From 8th to 14th of each month—on or before 21st of that month.

From 15th to 21st of each month—on or before last day of month.

From 22nd to last day of each month—on or before 7th of month following.

All bills are payable at the designated office of the carrier, and unless otherwise arranged the designated office shall be that of the carrier's agent from whom notice of charges due is received.

Where application for weekly credit has not been filed, agent may be authorized to grant forty-eight hours credit to responsible parties, which will be considered cash payment. At points where there are no banking facilities, or where firms have no accounting office, arrangements may be made whereby representative of shipper or consignee may make settlement by giving carrier's agent sight draft on shipper or consignee. The regulations also apply to cartage companies.

The above is a brief outline of the new circular. It will be noted that the credit period is practically the same as that in effect to-day.

The Canadian Railway War Board are having copies of this circular printed and distributed through agents of the carriers. We are also securing a supply to be sent to each one of our Branch Secretaries, and those interested may secure copies from them.

DEMURRAGE RATES SHOULD BE REDUCED.

The present high car demurrage rates applicable in Canada, which the Board of Railway Commissioners stated should be maintained during the war, might well be reduced now that the abnormal conditions existing at the time they were established have changed, and there is an abundant supply of empty cars. Applications have already been made to the Railway Commission for restoration of the old demurrage rates of one dollar per car per day and reports from Washington indicate that new rules will be made effective shortly by the United States Railroad Administration providing for reduction in the present rates on their lines to the basis of two dollars per car per day for the first four days delay beyond the free time limit and five dollars per car for each succeeding day's delay.

Another matter at present before the Canadian Railway Commission is the "Average Demurrage Plan." A request was made for this arrangement by the Canadian Manufacturers' Association as far back as 1913, but the Commission withheld their decision and announced when the matter was taken up with them again in 1917 that it would be held over until "after the war." They have not intimated that it will receive attention. This arrangement, if put in force on Canadian Railways, should prove beneficial to pulp and paper mills. The new demurrage rules proposed by United States Railroads provide that where the average agreement is entered into between a shipper and the railway, the shipper will receive a credit for each day a car is released in less than the free time limit, such credits being applied against demurrage which may accrue on other cars delayed beyond the free time limit by the same shipper or consignee during the same month. Under this arrangement if a mill released a car of pulpwood within one day, but delayed a day over the free time limit in releasing another car, or a car of coal, for instance, the credit created by the quick release of the pulpwood car would cancel the demurrage accrued on the coal car. Only four credits are recoverable against demurrage on any one car under the United States regulations, and if a car is delayed more than four days beyond the free time limit the fifth and each succeeding day would be charged demurrage at five dollars per car the same as though no agreement for average demurrage had been entered into. Accounts are to be balanced and settlement made at the end of each month and if credits exceed debits accounts will be cancelled. The United States regulations do not permit credits on inward cars being applied against debits on outward cars or vice versa, and considerable dissatisfaction with the new rules on this account is being expressed by the shippers.

The Average Demurrage Plan if put in force on Canadian railways would apply only where the shippers entered into the necessary agreement to adopt it with their local railway representatives.

If it pays the big pulp and paper companies to reforest their waste lands, planting three-year-old seedlings as a cost of from \$9 to \$10 an acre, why should it not pay the provinces which have large areas of waste land to pursue the same policy? asks the St. John, N.B., Telegraph.

Technical Section

REPRESENTATIVES TO BUFFALO MEETING.

Announcement is made that the Technical Section of the Canadian Pulp and Paper Association will be officially represented at the meeting of the Technical Association of the Pulp and Paper Industry, June 11-14, by the following delegates: Mr. Dan Daverin, Provincial Paper Mills, Thorold; Mr. George Carruthers, Interlake Tissue Mills, Toronto; Mr. Nelson Gain, Don Valley Paper Company, Toronto; Mr. T. Linsey Crossley, Toronto, and Mr. A. F. Costigane, Toronto. Mr. John Stadler, chairman of the Technical Section, will also be present.

In view of the excellent program of papers and mill visits it is expected that there will be a large attendance, including many members of the Technical Section. Mr. C. C. Heritage, of the National Aniline & Chemical Co., Buffalo, is secretary of the Local Committee of arrangements and should be advised immediately by those who will attend. He will be glad to secure rooms, if it is not left till too late, where desired. Prices are very moderate. Mr. Henry F. Obermanns, Hammervill Paper Co., Erie, Pa., is the man to write to if you are going to Erie.

General Program

Those who can do so are requested to assemble on the morning of Wednesday, June 11, at the Hotel Lawrence, Erie, Pa., for registration, badges, etc. At 10 o'clock automobiles or special trolley cars will be taken for a visit of inspection to the plant of the General Electric Company in Erie, returning to Hotel Lawrence in time for luncheon. At 2 o'clock the mills of the Hammervill Paper Company will be visited, and in the evening the members will be guests of the company at dinner in the Hotel Lawrence. This will conclude the program for the first day of meeting and the party will leave for Buffalo on train leaving Erie at 8.39 p.m. It is somewhat less than a 2-hour run from Erie to Buffalo and members may expect to reach headquarters shortly after half-past 10 o'clock in the evening.

In Buffalo the headquarters is Hotel Statler. Paul Kellogg, Larkin Company, Buffalo, is chairman of the Local Committee of Arrangements, with C. C. Heritage, National Aniline & Chemical Company, and Emile R. Low, The Beaver Company, associates.

At business sittings to be held at Larkin Company Auditorium, Buffalo, on Thursday, June 12, papers and addresses of the greatest importance will be presented, and it is hoped that a worthy representation of the membership will attend. A complimentary banquet will be given at Hotel Statler in the evening to which all members are invited. Members are asked to signify their intention as to attendance.

Invitations have been received from paper and pulp manufacturers on the Niagara frontier, U. S. A., and Niagara peninsula, Canada, for visits of inspection to their mills, and a few industrial plants in Buffalo and Niagara Falls have likewise courteously offered to open their plants to the inspection of members of T. A. P. P. I. and their guests. Details of these visits will be announced later. The visits to American plants will occupy the entire day on Friday, while Saturday, June 14, will be taken up with a trip to Niagara Falls, and visits to pulp and paper mills in Thorold, Mer-

riton and St. Catharines in Ontario, where members will be guests of the Canadian paper manufacturers.

ANOTHER AMERICAN MEMBER.

It is a pleasure to announce the election to membership in the Technical Section of Mr. F. C. Clark, head of the Research Division of the American Writing Paper Co. Mr. Clark has had much experience in paper mill work and for a number of years past has had charge of the pulp and paper work of the U. S. Bureau of Standards. He is now engaged on what will result in the first attempt to sell high grade papers to the public on a specification basis.

Dr. Christian Bay of the Riordan Pulp and Paper Company, Hawkesbury, has also been elected a full member in the Technical Section. He was ten years a chemist in the Greaker Pulp and Paper Mill, Norway and for three years was Technical Manager of the Enso Sulphite Pulp Mill in Finland. He was born in Odalen, Norway, and is a member of the Norwegian Engineering Institute and the Association of Norwegian Pulp and Paper Engineers.

REVIEW OF RECENT LITERATURE.

A-1. Pulp from the bark and the wood of the baobab of South Africa. (*Le bois et l'écorce de baobab de l'Afrique du Sud.*) Bull. Imper. Inst., **15**, p. 326, (1917), through *Chimie & Industrie*, **1**, p. 433, (1918). (See *Pulp & Paper*, **16**, p. 938 (Oct. 17, 1918).—A. P.-C.

A-12. Casein waterproof glue. H. A. Gardner, (Aircraft Technical Note No. 46, Navy Department, Bureau of Construction and Repair, May 23, 1918.)—The Forest Service has recently completed some very extensive tests with casein glue. These tests have demonstrated that there are now available, commercially at least, three brands which are all furnished by the makers in the form of dry compounds to be mixed with water. These glues are to be considered waterproof in the sense that they are not dissolved out or injured by water. Permanently prolonged soaking causes such glues to soften and become weak, but upon subsequent redrying they regain their former strength. The principal difficulty with these glues is in their rapidity of setting after being mixed with water; from two to five hours is the longest period of fluidity. Experimental batches of casein glue, to which certain materials have been added to delay the set, have, however, remained fluid and workable for periods as long as forty-eight hours. Attempts have been made to determine what percentage of bad joints would occur in using casein glue. Every one of about 200 specimens made by ordinary mechanics was found satisfactory. It is believed that, if the instructions of the manufacturers are followed casein glue is a safer material for aircraft construction than hide glue.—*J. Franklin Inst.*

A-15. The distillation of cellulose and of starch in vacuo. (*Sur la distillation de la cellulose et de l'amidon dans le vide.*) C. R. Acad. Sc., **166**, pp. 3-9, 1918, through *Chimie & Industrie*, **1**, p. 279, 1918.—Pure cellulose (cotton) when gradually heated in a distilling apparatus under a pressure of 12-15 mm. gives off first water, then, between 200-300° C, a heavy yellow oil, which turns to a pasty, semi-crystalline mass.

forming 45 per cent of the cellulose taken. 10 per cent of the cotton remains as a carbonaceous residue. A white compound (formula $C_{10}H_{16}O_2$) can be extracted from the distillate by means of hot water and acetone. This is identical with the levoglucosan which Tarré extracted from glucosides. The authors suggest the polymerization of levoglucosan to cellulose, starch or dextrin. A. P.-C.

E.2. Alcohol from waste sulphite liquors and from wood. (Production d'alcool des lessives sulfitees et du bois.) *Brennerei Ztg.*, May 21, 1918, through *Chimie & Industrie*, 1, p. 781, 1918. According to results obtained in Sweden, the cost of a plant for the recovery of alcohol from waste sulphite liquors is quite low. Twelve of these plants have been erected in Germany, sufficient to handle the liquors produced, which were about half those on a pease basis. The yield is reckoned at 40.5 per ton of dry pulp, or 9.1 per cu. m. of liquor, and the estimated production is 116,000 hectolitres (about 2,600,000 gals.) The liquor is treated with powdered limestone with a little slaked lime, and small quantities of ammonium sulphate, superphosphate and yeast extract (obtained from previous fermentations) is added. The steam consumption is high owing to the fact that the fermented liquors contain only 0.9-0.95 per cent of alcohol. The first experiments on alcohol from wood, carried out at a plant near Cologne, resulted in an average yield of 60 litres per ton (metric) of dry wood, and this may yet be improved.—A. P.-C.

E.2. Improved method of precipitating lignone in waste sulphite liquor. (Perfectionnements dans les procedes de precipitation du lignone des eaux residuelles des procedes dans lesquelles sont produits des sulphites de cellulose). *Chimie & Industrie*, 1, p. 775 (1918).—The operation takes place in two stages. The apparatus described consists of: (1) 2 digesters of about 100-150 cu. m. with external heaters in which the liquor is heated to 140-150° under 4.5 atmospheres pressure, by means of the gases and vapors escaping from autoclaves in which is carried out the second stage of the process. (2) A series of autoclaves heated to 200-210° by means of live steam, and in which is effected the precipitation of the lignones. The autoclaves are fed at regular intervals from the digesters. Under these conditions the treatment in the autoclave requires but 20-30 minutes.—A. P.-C.

E.2. Synthetic alcohol in Germany and Switzerland. (Production de l'alcool synthetique en Allemagne et en Suisse.) *Chimie & Industrie*, 2, p. 236, (1919).—This industry has greatly expanded in Germany during the war to supply alcohol for fuel, and has largely supplanted alcohol obtained from potatoes. 115,000 tons of alcohol are obtained as a by-product in the manufacture of celluloid (287,000 tons), and 17,000 tons are obtained from saw-dust. But the largest amount of synthetic alcohol is obtained from calcium carbide. This process is also largely used in Switzerland, where, moreover, the acetaldehyde is also oxidised to acetic acid.—A. P.-C.

E.5. Process for making pulp from bamboo. (Procede pour la production de pate a papier ou de cellulose, au moyen de bambou, et autres vegetaux similaires, et produits en resultants). French patent No. 475,981, granted to J. L. Jardine and Thos. A. Nelson, England, June 29, 1915. *Le Papier*, 22, p. 88, 1919.—The usual processes employed for making sulphite,

when applied to bamboo and similar woods, yield a pulp which cannot be successfully bleached on a commercial scale. This is due to the excessive acidity of the cooking liquor caused by the liberation and retention in the digester of gaseous SO_2 . In the usual sulphite process this gas is kept in contact with the wood as long as possible, and is relieved merely in order to permit sufficient steam to enter the digester. When bamboo is treated in this manner, a secondary reaction sets in during the last stages of the cooking, and a brown aldehydic compound is deposited on the fibres, rendering them unfit to be bleached. If, on the other hand, the hydrolysis is checked to prevent this deposit on the fibres, the lignin is incompletely broken down, which also prevents the pulp from bleaching. The present patent covers a process whereby the lignin, and the pectose and coloring matters are removed sufficiently to allow of successful bleaching of the resultant pulp without any excessive consumption of bleach. To ensure the complete removal of the lingo-constituents, a sufficient amount of available SO_2 must be supplied for their sulphonation. A base yielding a soluble sulphite (preferably sodium or magnesium) must be supplied to remove the pectose matters. As the proportions of the ingredients of the wood vary, it is advisable to have an excess of both the active substances in the liquor. A satisfactory liquor (Mg. base), is as follows: Total SO_2 , 3.25 per cent; free SO_2 , 1.80 per cent.; combined SO_2 , 1.45 per cent. The wood is crushed, cut into pieces of a suitable length, and charged into a digester. About $4\frac{1}{2}$ litres of the above-mentioned liquor are required per kilo of bamboo. When the digester has been filled it is steamed by introducing the steam directly into the liquor, but provision must be made to allow any SO_2 liberated to escape freely at the top. In the later stages of the cooking, when most of the SO_2 has been driven off, the relief valve may be partially closed to prevent waste of steam. Cooking is stopped when the total SO_2 in the digester is about 1.0 per cent. It takes about 5 hours to bring the pressure up to 75 pounds, and the cooking is continued about 10-12 hours longer. The yield is at least 50 per cent. About 12 per cent bleach (calculated as 35 per cent bleaching-powder), is required to bleach the pulp completely.—A. P.-C.

OTTAWA NOTES.

The recommendation of the Paper Controller to the Judges of the Paper Control Tribunal which has been daily expected did not up to Tuesday morning materialize. Mr. Pringle stated that he expected his order to be out in a couple of days.

At the E. B. Eddy sulphite plant the high water partially submerged some of the buildings and the view was expressed that if the river rose another fifteen inches that a considerable portion of the extensive operations of the E. B. Eddy and J. R. Booth plants would cease. The Booth saw-mill and board mill closed owing to the high water. Six hundred men were put out of work. The water in the Ottawa river is eight feet higher than it has been since the flood season in 1909. The depth at the foot of the Rideau Canal locks registering 24 feet 6 inches.

Mr. George H. Millen, president of the E. B. Eddy Company, up to the beginning of this week, reported a good demand for the various grades of paper manufactured by this company.

PULP AND PAPER NEWS

M. S. Kilby, wholesale paper dealer, Montreal, was in Toronto last week on a visit to C. H. Tanner, manager of his Toronto branch, 42 Adelaide street west.

Roland D. Craig, who is now a member of the forestry staff of the Commission of Conservation, Ottawa, and recently completed a report on the forest resources of British Columbia, is spending some time in Toronto interviewing the members of the timber and pulp wood trade. He is conducting an inquiry into the wood resources of Ontario, on which he will be engaged for some time. His work will deal especially with available quantities, conditions, operating costs, production, etc.

For some time the industries of Thorold have been suffering from power shortage, and one of the concerns which recently had a large portion of its power cut out was the Beaver Board plant. Sir Adam Beck was lately interviewed by a deputation from Thorold and the request placed before him for a block of power, which, he stated, the town could have at any time. The Board of Trade and Town Council of Thorold are looking for definite assurance of sufficient hydro power in order to deal with prospective industries.

George Carruthers, President of the Interlake Tissue Mills, Toronto, spent several days in New York on business last week.

The water has been let out of the old Welland Canal, and all the paper plants along the route are taking advantage of the shut down of two weeks to overhaul their equipment and make necessary repairs. The Montrose mill of the Provincial Paper Mills Co. is laying a new concrete floor in the beater room of their No. 1 machine mill, and also putting a new fireproof roof on the building as well as enlarging the facilities of their coal yard for the more expeditious handling of fuel. A new concrete bridge is being erected over the canal at Thorold between locks 22 and 23, which will be known as the Keefer bridge, while the old wooden gates on the waterway as fast as they become useless, are being replaced by concrete ones. The old Welland Canal will not be used any longer for shipping purposes, but the water will be employed entirely for power. Up to this season barges bearing pulpwood and other supplies have been brought in by this route, but henceforth only the new Welland Canal will be used for this purpose.

John Martin, of the John Martin Paper Co., Winnipeg, spent the past week in Toronto calling upon his many friends in the trade. He has been passing the past few weeks in the south for the benefit of his health, which is much improved. Mr. Martin hopes in the near future fully to recover his former vigor. During his stay in Toronto, a meeting of the book and writing section of the Canadian Paper Trade Association, of which Mr. Martin is Vice-President, was held at the office of the secretary, N. L. Martin, and a warm welcome was extended to him. It is likely that the annual gathering of the Canadian Paper

Trade Association will be held in Montreal on June 24th next. Definite announcement will be made in the near future.

E. H. Judge, of Price Bros. and Co., Quebec, and H. D. Dean, of the Abitibi Power and Paper Co., have been elected members of the Executive Committee of the Purchasing Agents' Association of Montreal and district.

J. W. Hennessy, wood superintendent for J. R. Booth, at Fort Coulonge, Que., died in Boston recently, and the remains were interred at Fort Coulonge.

C. De Wolf Reid, of Montreal, was in Toronto this week, calling upon the members of the paper trade.

In Toronto recently Judge Morson dismissed the suit brought by Newsome and Gilbert, manufacturing stationers, 122 Richmond street west, against A. J. Victor and Co., Toronto, for \$351 for paper destroyed when the water overflowed in the flat rented by them.

Driver W. George H. Logie, son of James Logie, the well known paper mills representative of Toronto, has returned from overseas. He enlisted with the 54th Battery in February, 1916, and on his arrival in England was transferred to the 2nd Divisional Ammunition column. Driver Logie spent twenty-six months in France, and was in all the leading engagements from Vimy Ridge up to the close of the war, and, beyond being gassed once or twice, escaped unscathed. Previous to joining the colors he was with his father in the paper business, and will resume his former connection.

Acer & Co., of Montreal, have been appointed selling agents for the kraft pulp of the Dryden Timber and Power Co., Dryden, Ont. The demand for kraft pulp has been improving considerably of late.

W. J. Taylor, of the Woodstock Sentinel-Review, and President of the Canadian Press Association, which will hold its sixty-first annual meeting in Toronto on June 5 and 6, has returned from an extended business trip as far as Victoria and Prince Rupert. In an interview Mr. Taylor stated that he is more than ever convinced that the eastern manufacturer and the western farmer should get together and settle the tariff issue on a basis mutually agreeable.

Charters have been recently granted to Belanger & Boldue, Limited, with head offices in Quebec City and a capital stock of \$20,000 to carry on a general lumber and pulpwood business, and to deal in charcoal, etc. Among the incorporators are Philippe Bechar, of Montmagny, and Wilfrid Boldue, J. A. LaRue, Eugene Trudel and George Cantin, of Quebec. Another concern which has been incorporated is La Compagnie des Bois du Nord, to manufacture wood, pulp and the products thereof. The head office is in Amos, Quebec, and the capital stock \$99,000. Those back of the new organization are David Gourd, C. E. Marchand, Philippe Massicotte and Eugene Lafleur, of Amos, and J. O. Morin, of Villemontel, Que.

The Don Valley Paper Mills, Toronto, have installed a new North save-all in the beater room, and made

other improvements in equipment. The plant is very busy at present with orders for several weeks ahead, and the three-four system, which was instituted voluntarily on the part of the management, is working out satisfactorily to all concerned.

C. E. Nicely, assistant sales manager of the Toronto Paper Mfg. Co., Toronto, spent a few days this week on a visit to his father, P. P. Nicely, manager of the La Salle Paper Co., South Bend, Ind.

E. Maguire, who is at the head of the Safety Work of the Abitibi Power and Paper Co., Iroquois Falls, Ont., was in Toronto recently on business.

W. McLaughlin, who was overseas for two years, has taken a position as chief accountant with the Fraser Companies, Ltd., Edmundston, N.B. Previous to his present connection Mr. McLaughlin was for five years with the Laurentide Co., of Grand Mere, P.Q., as chief accountant and office manager.

The New Ontario Colonization Co., Ltd., whose saw and roasting mills are at Jacksonboro, Ont., report that they started operations early in the month. They further state that the labor situation is not bad, and there are plenty of men, but all do not seem inclined to work. The demand for both rough and worked lumber, as well as pulpwood, is good, and the company are shipping out both. W. K. Jackson, of Buffalo, president of the organization, states that prices are satisfactory, although none too high considering the high cost of production.

BRITISH IMPORTS OF WOOD PULP.

The imports of wood pulp into the United Kingdom during the week ended April 26th, 1919, were:

	Tons.	£
Bleached Chemical, Dry	416	14,999
Unbleached Chemical, Dry	4,457	116,679
Mechanical, Dry	351	8,275
Mechanical, Wet	4,556	49,287

9,780 189,240

The receipts for the week ended April 27th, 1918, were:

	Tons.	£
Unbleached Chemical, Dry	3,600	160,782
Mechanical, Dry	635	23,143
Mechanical, Wet	808	10,335

5,043 194,260

INTERNATIONAL PAPER MILLS RESUMED WORK.

New York, May 26.—Mills of the International Paper Company in several states which had been closed throughout the greater part of the month through a strike of the employees for increased wages, resumed operation to-day, it was stated at the company's offices here. The men returned to work under orders of their union officials pending a conference between the latter and heads of the company over the wage demands which the company had claimed were in violation of a decree of the National War Labor Board. Officials of the company have agreed to meet delegates from the locals Wednesday in New York for a conference on the wage question.

The union has reached an agreement with the St. Regis Paper Company of Watertown.

DEATH OF W. P. GUNDY A SHOCK TO TRADE.

Many friends were shocked last week at the sudden death of W. P. Gundy, president of W. J. Gage & Co., manufacturing stationers of Toronto; and president of the Kinleith Paper Mills, St. Catharines, Ont. Mr. Gundy was one of the outstanding figures in Toronto business life, and took a very active part not only in the advancement and progress of the paper trade in general, but also in the larger affairs of the city. He was a former president of the National Club, the Toronto Board of Trade, the Ontario Pulp & Paper Makers' Safety Assn., a trustee of the National Sanitarium Assn., and the Toronto Free Hospital for Consumptives. He joined the staff of the W. J. Gage & Co., 38 years ago and gradually worked his way to the highest position in the company. It was only a few months ago that Sir William Gage resigned the presidency to become chairman of the board, and Mr. Gundy was appointed president.

For the past year and a half he has been a member of the War Purchasing Commission, Ottawa, and his services were given freely, and devotedly and without any personal recompense, other than the faithful discharge of a patriotic duty.

Mr. Gundy was born in St. Catharines, 60 years ago, and as a boy entered the civil service in the Ontario Government Printing Bureau. Besides his wife, he leaves his mother, three brothers and three sisters.

Mr. Gundy regarded public service as a duty which every progressive business man owes to the community. He was kind, thoughtful and earnest, possessing splendid judgment and sound common sense. He brought to bear upon every question in the commercial world a broad view and a clear mind, and had always taken a deep interest in the Canadian Pulp and Paper Assn., and kindred organizations. Heart failure was the cause of his death, the end coming suddenly in his apartments in Ottawa on May 23. His remains were brought to Toronto, and the funeral took place on Monday afternoon, May 26th, from his late residence, 4 Hawthorne Gardens, Rosedale, to the Metropolitan Methodist Church, of which he was a leading member. The last sad rites were attended by many representatives of the paper trade and employes of W. J. Gage & Co., among whom he was held in the highest respect and greatest esteem.

McINTYRE HEADS NEW COMPANY.

The securities of a new pulp and paper concern will shortly be offered the Canadian public. Clarke Brothers of Bear River, N. S., who have been operating a lumber mill for some years, are now planning to build a sulphate mill. To finance the undertaking they are selling bonds which carry with them a bonus of common stock, says the "Editor and Publisher."

A. G. McIntyre of New York, who is a son-in-law of W. G. Clarke, is to be president and managing director of the new company. Mr. McIntyre was until recently special representative of the Committee on Paper of the American Newspaper Publishers' Association and the president and general manager of the Publishers' Paper Company.

\$12,000 IN WASTE PAPER.

In a bale of waste paper received at a paper mill at Charleston, W. Va., was found a certified check for \$12,500, which had dropped on the office floor of a Baltimore business house and been swept up by the janitor.



CANADIAN TRADE CONDITIONS.

Toronto, May 26.—Business during the past week was about normal, although the holiday, the general labor unrest and acute industrial situation in some of the cities had its effect in cutting down business in the West. In spite of the many untoward conditions jobbers report that May has shown a considerable improvement over previous months; in fact, one wholesaler declared that the volume done was in excess of anything for several years past. There is no doubt that the future of the paper industry is bright, and one thing stimulating buying is that the idea prevailing for some time, that paper was going to come down in price, has been exploded. Buyers are beginning to forget about past conditions, and to look to the future. They realize that the mills, with their three tour systems, which are now general, higher wages and increased cost of transportation and operation, will have to elevate quotations in the near future. The trend of everything is in that direction. A leading paper dealer, who has always given considerable thought to prevailing conditions, has shown that, except in a few lines, paper products cannot be reduced.

Business is good on the whole, and toilet and tissue mills are weeks behind in their deliveries, and may have to refuse some orders if trade keeps up. Specialty plants are also active, and the whole tone of conditions is improving. The pulp situation is growing stronger. It is interesting to note that improvements and extensions to plants are going ahead and definite announcement may be expected in a few days regarding the project at Kapuskasing, Ont., where the Spruce Falls Pulp and Paper Co. will proceed with the erection of a two hundred ton news plant, as well as the building of mechanical pulp and sulphite plants capable of supplying all the raw material for the newsprint division. Another trend of the times is evidenced in the installation of an additional newsprint machine by the Brompton Pulp and Paper Co., at East Angus, which will more than double the output of this organization, while the Howard Smith Paper Mills will, in the course of a few weeks, have their second unit at work at Beauharnois. This

all demonstrates that manufacturers have faith in the future of the Dominion as a great pulp and paper producing country, and one wonders how much more rapid and strong would have been the development if the government had not taken a hand in the control and regulation of news and book papers and arbitrarily fixed prices.

The trade is looking more and more to export, and regret that it is impossible to take greater advantage of foreign business which is being offered to Canadian mills on all sides. Good news has been received by some of the larger paper manufacturing companies, which is to the effect that, on June 1st, the British Government will reserve only fifty per cent of the tonnage instead of seventy per cent, as at the present time. In this connection it is interesting to note that the Cunard Line has recently doubled its shares without increasing its capital, or, in other words, the company proposes to capitalize its reserve fund to the extent of issuing to shareholders one new, fully paid up, ordinary share for each ordinary share now held.

One matter in which the Canadian Pulp and Paper Association and the Canadian Lumbermen's Association is vitally interested is in the work and research efforts of the Canadian Forest Products Laboratories, Montreal. The Laboratories have been losing some of their best men, who have gone into industrial and commercial spheres owing to the large remuneration offered. At a meeting of the Executive of the Canadian Lumbermen's Association held during the past week, this question was discussed and the President, W. Gerard Power, manager of the River Ouelle Pulp and Lumber Co., stated that the Federal Government should pay sufficient salaries to keep technical men and experts at the Laboratories, and the Government will be communicated with respecting the matter.

W. M. Stokes, of the Forest Products Laboratories, waited upon the members of the Canadian Lumbermen's Association to support the request for specimens of Canadian woods to be shown at an exhibition of timber grown within the British Empire, to be held in London, Eng., in October, under the auspices of the British Board of Trade. The species, grades and sizes of Canadian forest products, it is

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pointed out, should be as representative and comprehensive as possible. It is desired that the whole of the Canadian timber and pulpwood industry should be fully represented, consistent with the ability of the Dominion to export, so that all ports from which a given species can be shipped should be mentioned in the catalogue. The specimens will consist of spruce, hemlock, paper birch and other woods, and will be first shipped to the Forest Products Laboratories in Montreal.

Paper box factories are busy, and board mills report fair business. Envelope coated paper and other plants are enjoying good business, and the demand for sulphite pulp is getting stronger each week, and buying is more free. Prices are well maintained.

There is not much change in the rag and paper stock market. A very light demand exists for white envelopes and soft white shavings, but book stock is moving as usual. There are some calls for No. 2 manilas, but on the whole the general situation is unaltered. Cotton rags for paper making are not moving very fast, while a better requisition for roofing stock is noticeable.

Rag and Paper Stock Prices.

No. 1 white envelope cuttings	\$3.75
No. 1 soft white shavings	\$3.00
White Blanks	\$1.00
Heavy Ledger Stock	\$2.20
No. 1 magazine	\$1.30
No. 1 book stock	\$1.20
No. 1 manilas	\$1.65
No. 1 print manila . . . . .	.70c
Folded news . . . . .	.70c
Over issue, news . . . . .	.80c
Kraft	\$2.50
No. 1 clean mixed papers . . . . .	.60c
No. 1 shirt cuttings . . . . .	.10c
No. 1 unbleached cotton cuttings . . . . .	.8c
No. 1 fancy shirt cuttings . . . . .	.7c
No. 1 blue overall cuttings . . . . .	.6½c
Bleached shoe clip . . . . .	.6½c
White cotton hosiery cuttings . . . . .	.8c
Light colored hosiery cuttings . . . . .	.6c
New light flannellette cuttings . . . . .	.6c
No. 2 white shirt cuttings . . . . .	.7c
City thirds and blues (repacked), No. 1 . . . . .	.3¼c
Flock and satinettes	\$1.50
Tailor Rags	\$1.50

NEW YORK MARKETS.

New York, May 24.—Activity in the paper market has continued to increase this week, and the market has been possessed of all the elements of strength. Consumers have operated as buyers with considerably more freedom than for some months past, jobbers have found it necessary to broaden the scope of their purchases, and mills are now running on a nearer to normal scale than at any time since the signing of the armistice. Prices on all grades of paper are firm, and there is a decidedly upward tendency in view in quotations on certain descriptions.

The newsprint market has been particularly strong this week. Because of the strike of operatives in the plants of the largest producing company, consumers have been compelled to seek supplies from other manufacturers, while it is reported that the company itself has made large purchases from other

mills, so as to maintain deliveries to contract customers. The result has been a very active demand for newsprint, with the entire production absorbed by anxious buyers immediately it has become available. Present indications are that the strike will soon be settled. (See notice elsewhere of adjustment.) It is understood that the employees of one of the principal mills affected have offered to return to work and to discuss their demands with officials of the company provided the operatives in other plants will agree to do the same, and officials of the company and Labor Department representatives are now endeavoring to persuade the rest of the strikers to resume work on Monday.

Prices on newsprint have not undergone any change, but they have hardened to a perceptible degree, and there is no question that if the limited production continues for any appreciable length of time, values will advance. Most of the independent news mills have disposed of such surplus stocks as they had on hand, and buyers are now having considerable difficulty in placing further orders.

Book paper mills are experiencing a very good demand for their product. Publishers of magazines and other periodicals are steadily increasing their purchases, owing to the growing volume of advertising business they are being favored with, and scarcely a month passes that the average consumer of book paper does not find it necessary to purchase additional lots of paper to augment his contract supplies. Most mills are running at very near to capacity, and are shipping the great bulk of their output almost as soon as it becomes available. Prices are firm, and while no advancement has been recorded, indications are that prices will rise before they decline.

Demand for fine papers is on the increase, and prices are firmly maintained. Consumers of bond, linen and ledger stock evidently have regained confidence in the strength of the market, and are placing orders with less reluctance than for some time. Manufacturers are getting more business and in consequence do not show the disposition to grant concessions in price that they have recently.

Coarse papers are in moderate call and steady in price. Kraft wrappings are moving in increasing volume, while buying interest in manilas is good. Fibre papers are notably firm and moving with regularity. Tissues are holding firm after the decline of several weeks ago, with No. 1 white quoted at around \$1.00, No. 2 white at 80 to 90 cents, and No. 1 manila at around 80 cents.

The market for boards is in much contrast to that existing for the various grades of paper. Demand is light, and mills are seriously in want of orders. Prices are easy, and indications are some manufacturers are granting concessions as an added inducement to buyers to operate. Chip board is quoted at around \$37.50 a ton at the mill, and news board at the usual price of about \$5 more.

GROUND WOOD.—More activity has prevailed in the mechanical pulp market this week. The strike of operatives at certain newsprint mills has affected the pulp plants of this concern as well, with the result that the loss of production of ground wood is being more generally felt than the loss of consumption by those news mills shut down, for other paper mills have been compelled to seek pulp in the open market

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to augment their regular supplies owing to the increased operations of their plants. Independent grinders, therefore, have succeeded in liquidating a considerable portion of their reserve stocks, and are now less inclined to entertain bids for pulp at the low prices that have been mentioned in some quarters lately. Between \$26 and \$27 a ton at the Eastern grinding mill is the current range of quotations, and most manufacturers are insistent on the higher figure.

CHEMICAL PULP. No change of an important scope has come over the chemical pulp market. Business of moderate proportions has been done this week, and prices have been maintained. Consumers are still confining their orders to tonnages immediately needed, but with activity in the paper market on the increase, most users of pulp have found it necessary to absorb larger amounts of raw material. Unbleached sulphite of newsprint quality is selling freely at \$65 to \$70 per ton at the pulp mill, while domestic bleached sulphite is quoted at 5.25 to 5.75 cents, with some producers asking up to 6.00 cents for extra strong bleached. Easy bleaching is selling at \$85 to \$90 a ton, and domestic kraft at \$70 upward, depending on the grade and the amount involved. Foreign pulps are quotably steady, with the bulk of business at present consisting of limited lots of a hundred tons or thereabouts which holders of stock on the docks and in warehouses release from time to time. Several local importing firms now have representatives in the Scandinavian countries, and it is expected that some definite information concerning conditions there will soon be available.

RAGS.—Cotton rags are moving in increasing volume and at higher prices. Ever since felt manufacturers came into the market about a month ago, values have consistently climbed, and high grades have advanced in equal proportion to the low-prices descriptions. No. 1 roofing stock has sold this week at 2 cents f.o.b. New York, while mixed satinets have

commanded around 1.80 cents. Prices on the former are relatively higher than on the latter owing to the greater scarcity of cloth strippings as a result of the slow operations of woollen rags graders whence the supply of strippings comes. Thirds and blues of re-packed quality are selling at between 3.50 and 3.75 cents, with good country packing firmly held at the higher level. White rags are sought in increasing quantity at a basis of around 5.75 cents New York for No. 1 re-packed whites. New cuttings are moving with more freedom and at firm prices. No. 1 white shirt cuttings are quoted at around 11 cents New York, and the bulk of available supply is held at stronger values.

PAPER STOCK.—The market for waste paper rules generally quiet. Demand is slight, and current shipments seldom involve more than four or five earloads at a time, with mills exhibiting pointed reluctance to buy in wholesome volume. This reason for the dullness apparently is the slight operations on board mills. Most of these plants have stocked up at the low prices recently ruling, and are now unable to absorb further lots because of the lack of storage room. No. 1 mixed paper is selling in the local market at 35 to 40 cents per hundred pounds f.o.b. New York, and the offered supply is in excess of the demand. Flat folded news is worth no more than 50 cents New York, and many manufacturers are securing stock at lower figures. Shavings are nominally quoted at 3.75 to 4.00 cents a pound New York for No. 1 hard whites, and around 2.75 cents for soft white shavings of No. 1 grade. Kraft is steady and moving at between 2.00 and 2.15 cents, while book stock is freely sought and is rising in value, sales being noted at 1.40 to 1.50 cents New York, or at an advance of about \$2 a ton.

BAGGING AND ROPE.—The rope market is steady of tone and a fair trade is passing at between 4.50 to 4.75c a pound for No. 1 Manila rope. Serap bagging is moving chiefly toward one source at prices ranging around 1.90 to 2.00 cents per pound f.o.b. New York.

WOOD PULP REVIEW FOR APRIL.

In connection with the Federal Trade Commission's current statistics on the paper industry, a summary of the monthly reports required from manufacturers of wood pulp and other kinds of pulp used in paper making, is submitted herewith for the month of April, 1919. The table shows the kind of pulp, the stocks, production, pulp used and shipments for the month. The pulp shipped during each month represents only pulp shipped to a concern different from the one pro-

ducing it. Loss of production is shown by giving the idle machine time reported by each company for each kind of pulp.

Pulp Production.

The following is a tabulation of the production, pulp used by the company producing it, shipments to outside concerns, and stocks of finished pulp, in tons of 2,000,000 pounds on an air dry basis, for April, 1919, for the operating mills.

Kind of Pulp.	Finished Pulp		Net tons — Air Dry Basis.			
	No. of Mills.	On hand 1st of month.	Production for month.	Used during month.	Shipped during month.	On hand end of month.
Ground wood pulp	162	150,678	146,896	114,657	8,139	174,778
Sulphite, News grade	62	27,128	50,059	41,144	7,436	28,607
Sulphite, Bleached	33	13,971	37,610	19,860	15,350	16,371
Sulphite, Easy Bleaching	7	3,037	4,296	3,167	1,491	2,675
Sulphite, Mitscherlich	7	2,470	6,322	3,902	2,484	2,406
Sulphate pulp . . . . .	..	shredtaem	10,651	6,574	3,215	7,091
Soda pulp	28	7,980	28,225	17,574	8,411	9,620
Other than wood pulp	7	127	925	824	163	65
Total of all grades	211,320	284,984	208,002	46,689	241,613

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Total stocks of all grades of pulp in the mills on April 30 amounted to 241,613 tons. Stocks of all grades increased during the month, except Easy Bleaching Sulphite, Mitscherlich Sulphite and Other than Wood Pulp.

Comparing the stocks on hand at the domestic pulp mills at the end of the month with their average daily production based on the 24 months' period of 1917 and 1918, the figures show that:

Groundwood mill stocks equal slightly more than 39 days' average output.

News grade sulphite mill stocks equal slightly less than 12 days' average output.

Bleached sulphite mill stocks equal slightly more than 10 days' average output.

Easy bleaching sulphite mill stocks equal about 10 days' average output.

Mitscherlich sulphite mill stocks equal slightly less than 10 days' average output.

Sulphate mill stocks equal slightly less than 16 days' average output.

Soda pulp mill stocks equal slightly more than 8 days' average output.

Mill stocks of other than wood pulp equal slightly less than 2 days' average output.

Total mill stocks of all grades of pulp equal slightly more than 22 days' average output.

Loss of Production.

The number of grinders and digesters showing lost time during the month of April in operating mills was 1,152. These figures do not include the machines in 4 mills that were not in operation during April, chiefly on account of lack of orders, repairs, lack of material and lack of power. The total time lost in March was 193,363 hours, and 168,741 in April.

Among the reasons for lost time is the interesting item of 2,705 hours for news grade sulphite digesters, due to dirty water. Groundwood pulp mills lost 25,026 hours because of low water, etc., and sulphate and soda mills lost 7,704 hours on account of labor conditions.

SUMMARY OF THE U. S. PAPER INDUSTRY FOR APRIL.

The total time the machines were idle, reported by domestic mills was 240,057 hours, as compared with 243,386 for March. This includes the machines in mills which were closed down completely. The principal reasons for lost time were lack of orders and repairs. "Other reasons" include lack of labor, lack of material, lack of power, etc. Five mills reported 3,226 hours lost on account of labor trouble. Paper board mills lost a total of 86,900 hours, five mills 41,151, and wrapping and tissue each about 32,000.

Comparison of Stocks and Production.

Comparing the stocks on hand at the end of April, 1919, with the production for the month, the Federal Trade Commission states that:

Newsprint mill stocks equal slightly more than 8 days' output.

Book paper mill stocks equal slightly less than 14 days' output.

Paper board mill stocks equal slightly less than 12 days' output.

Wrapping paper mill stocks equal slightly more than 41 days' output.

Bag paper mill stocks equal slightly more than 15 days' output.

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Miscellaneous paper mill stocks equal slightly more than 26 days' output.

Total paper mill stocks of all grades equal slightly less than 17 days' output.

Stocks of all grades except felt and building were greater at the end of April than at the beginning of the month. The total stocks of all grades in the hands of manufacturers at the end of April amounted to 287,991 tons. Adding to the stocks of the mills, the newsprint stocks of jobbers and publishers, the hanging paper stock of wall paper concerns, the mill stocks at terminal and delivery points on April 30, and the transit tonnage of publishers and wall paper concerns gives a grand total of 522,955 tons of all grades reported to the Federal Trade Commission.

Production of paper, by grades for the month of April, 1919, compared with April, 1918, in net tons, was:

Newsprint (Standard and Special Grades of News), 116,278 and 111,480.

Book (M. F., S. S. C., and Coated), 67,623 and 76,702.

Paperboard (Straw, Chip, Fibre, Leather, etc.), 138,802 and 162,836.

Wrapping (Kraft, Manila, Fibre, etc.), 48,158 and 76,859.

Bag (all kinds), 9,435 and 13,197.

Fine (Writings, Bonds, Ledgers, etc.), 22,470 and 29,823.

Tissue (Toilet, Crepe, Fruit Wrappers, etc.), 10,900 and 9,830.

Hanging (No. 2 Blank, Oatmeal, File, etc.), 7,326 and 4,858.

Felt & Building (Roofing, Sheathing, etc.), 17,844 and 24,807.

Other grades (Specialties not otherwise classified), 13,048 and 14,618.

Total of all grades, 451,889 and 525,040.

Total shipments were 435,760 tons, and 505,598 tons for 1919 and 1918, respectively.

Imports and Exports.

Newsprint is the only grade of which the United States is a heavy importer. Practically all of this tonnage is imported from Canada. The value of the exports of newsprint in March, 1919, amounted to almost one million dollars.

Book paper and fine paper are the principal grades exported, the combined value of the two amounting to almost four and one-half million dollars for March, 1919.

The total imports of all grades were worth \$3,690,129, practically the same for March, 1919, as for March, 1918. The value of the total exports, however, for March, 1919, was almost three times the value of the exports for March, 1918. The amount for the month was \$8,085,981.

Mr. F. I. Spielman, of Spielman Agencies, Regd., Montreal, agents for Griffiths Bros. & Co., London, British Aluminium Co., British Ever Ready Co., etc., is about to undertake a business visit to England.

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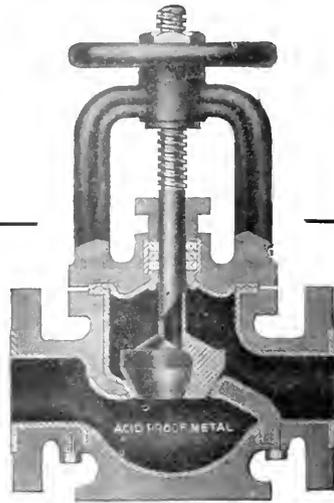
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EDITORIAL

THE STRIKE AND STRIKES.

Practically everybody in Canada is affected in some degree by the strike which has been in progress in Winnipeg and other Canadian cities. Nearly every paper and magazine as well as many of the prominent leaders in industrial and political circles have expressed their views and labor men have also had considerable to say in regard to this important event. While the strike was ostensibly called in the interest of obtaining wider recognition of the principle of collective bargaining, the Winnipeg affair soon developed into an open movement of a distinctively revolutionary character whereby the Strike Committee endeavored to substitute Soviet rule in place of the duly elected municipal authorities. Although a large number of Winnipeg workmen answered the call and many trades unionists were induced to join in a general sympathetic strike it soon became apparent that the majority of the citizens of Winnipeg were not to be so easily robbed of their political and personal rights so that the force and success of the strike movement seems to have distinctly subsided.

There are, unfortunately, a considerable number of members of trade unions in other parts of Canada who have been misled by what appears to be misrepresentation of reasons for the Winnipeg trouble and in other cities a number of so-called sympathetic strikes have broken out. In but few if any cases were there local reasons for precipitating a strike of any character. In some cities there evidently was some slight disaffection which might easily have been settled in a peaceable manner had there been a serious attempt to do so. In some cases it is evident that these slight differences of opinion which might easily have been adjusted were seized upon as an excuse for a general walkout. The result has been in many cases a serious loss of work and wages, and a loss of production in lines where continuance work was sorely needed and by workmen who had little or nothing to gain by such demonstrations. The building trades in Toronto is an instance. One of the causes for the present industrial unrest has frequently been stated to be the lack of housing and the increases in rents. Just when an opportunity has come along for workmen connected with the building trades to assist in alleviating this condition and when a chance for remuneration work has come along many of them have joined the strikers in Toronto and it can hardly be expected under these conditions that they will have either the sympathy of

the public or the satisfaction of having accomplished something worth while. The same may be said of most factors in every sympathetic strike. It is inconceivable in this day that workmen in any line should desire involving the whole community in a general disturbance and to ask their fellow workmen in other lines to sacrifice their wages and in some cases even their jobs when a board of arbitration can bring about a settlement fair to both sides and without the loss of the wages needed by the workmen and their families or the loss of production of goods needed by the country. It must be realized that without production no wages at all are possible and that disturbances such as we are now witnessing, which not only curtail profits to both worker and employer, but also indicate a condition of instability in industry discourage the investment of the savings of the public in industrial enterprise. Without the confidence of the general public in manufacturing and other industrial enterprises it would be impossible to command the capital which is necessary for supplying the buildings and equipment that must be furnished before workers can be provided work whether they be trade unionists or not.

Paper mills and pulp mills have so far been in no wise affected directly by the strikes in various parts of Canada. But they have been affected indirectly because these strikes have made difficult or impossible the distribution of the product of the paper mill upon whose sale depends the employment and the living of the paper maker. To go out on sympathetic strike would, of course, be the height of folly, and it seems that the pulp and paper union men realize this. Most of the mills are more or less at a distance from centres affected by strikes, but it is doubtful whether the pulp and paper makers even in the infected areas can be induced to lend their support to a movement which is obviously none of their concern and in fact one which offers the gravest dangers to the stability of Canadian industry by attempting to undermine the right of every citizen to have his share in both the privileges and responsibilities of democratic government. The sound common-sense of these men will check any tendency completely to disrupt Canadian industrial life just when events are beginning to take a turn which indicates a large and speedy improvement in the relations between the workman and his employer, and the opportunities for the former to share in the

policy and affairs of the plant where he works, at least so far as his conditions of labor and living are involved.

The industrial world has quite generally come to accept in some degree at least the idea of having workers organized into trade unions and some have accepted the idea of collective bargaining. The organization of the workmen has many distinct advantages, particularly where an effort is made to improve the character and capacity of the worker, capacity not only for quality as well as quantity of work, but also capacity for assuming a share in the responsibility of management. To our minds the principal disadvantage of collective bargaining is that it discourages the old-time intimacy of the workman with his employer such as most of the older paper makers enjoyed.

A cartoon significant of the situation appeared last week in a Montreal paper. The picture showed Capital studying the book of Labor and its problems, and Labor was shown studying the book of Capital and the problems of management. It is this mutual studying of the problems of the other which must eventually be more generally practised if we are to hope for a happy solution of what is called the labor problem and a more satisfactory relation between the two great elements of industrial life.

A PAPER MILL IN A PRESS ROOM.

Some little stir was made the other day, when Mr. F. Becker, of Becker & Co., London, told a newspaper correspondent in Montreal that a newsprint mill should be as close as possible to the press room of the consumer, and further suggested that Canada's long suit is pulp, of which British paper mills demand enormous quantities, and which they would be glad to buy from Canada.

Mr. George F. Steele, of Canada Export Paper Co., who is probably the best informed man on this side of the water regarding export conditions and foreign requirements, particularly for newsprint, differs with Mr. Becker. In an interview published in the Financial Times he points out that Mr. Becker is in the fortunate position of being the largest importer of pulp and the third largest manufacturer of paper in England. It may readily be inferred that Mr. Becker is slightly biased in favor of his own business, and this, of course, can not be imputed as evil to him. Furthermore, Mr. Becker had shipping interests before the war, and was thus in an advantageous position to secure ships for carrying pulp from Canadian pulp mills to his paper mills and customers in England.

Mr. Steele cites several instances where newsprint mills have been located almost at the back door of press rooms, and have had not anything like the measure of success that one would expect from Mr. Becker's arguments. In fact, one of these sold its

equipment practically as junk. It seems that the trend of modern manufacturing is rather to concentrate than to disperse operations, carrying the products as near to completion as possible at points close to production of principal raw materials. This tendency is particularly noticeable in regard to fertilizers, cotton goods, metallurgical work and even the production of power at the mouth of the coal mine. The success of the paper mill in the woods lies in keeping the forest reasonably accessible by conservation and reforestation.

Ships are the solution to Canada's export trade in pulp and paper, according to Mr. Steele, who says that only 30 per cent of outgoing tonnage is released for commercial business, and paper men find their proportion of this quite hard to get. The production and export of pulp only would scarcely relieve the situation, as very few, if any, individual companies could own their own ships. The shipping situation in regard to pulp, paper and other manufactures here is just the reverse of that in Scandinavia. With Canada it is "all going out and nothing (comparatively) coming in." Norway and Sweden import so much stuff that there is plenty of outbound cargo space. The matter of a subsidy to equalize freight rates is touched on by Mr. Steele. We are inclined to believe that this would not work out well. The debate over the railroads shows the doubtfulness of wisdom in passing carrying charges on to people who have but a very remote, if any, participation in the benefits. This argument would be as pertinent in this case, only more so. It is true, however, that by shipping England a higher class freight, more money would come to Canadians to spend in England for return cargoes, and this extra business should have an effect on freights.

The factor likely to give greatest benefit to our pulp and paper industry is England's preferential treatment of the Dominions. In making the best of this, let us not fail to consider the present state of the industry in the Old Land, and do nothing that will retard its recuperation from effects of the war, which we have not felt at all in comparison.

PURELY PERSONAL.

It has been discovered why the editor is not becoming gray headed. The gray hairs fall out—and great is the fall thereof!

Our congratulations to the new Canadian Institute of Chemistry on the receipt of the first subscription to the Foundation Fund, a check for \$500. Our compliments to the Jas. Robertson Co. for their appreciation of the value and aims of the Institute as well as their generosity and ability to make this substantial contribution. The office of the Institute is the Kingdon Building, Beaver Hall Hill, Montreal.

The Balsam Injury in Quebec and its Control

By J. M. SWAINE, Division of Forest Insects.

(Reprinted from the Agricultural Gazette of Canada, Vol. 6, No. 3, March, 1919.)

Few problems are more important in the future of pulpwood supplies for Canadian mills than the diseases and insects affecting spruce and balsam.—Ed.

We are beginning to realize at last that our Canadian forests are disappearing very rapidly, but very few, even among those of us familiar with our woods appreciate how fast this process has actually become. Fires, insects and fungi are the greatest enemies we have to deal with. The fire problem is rapidly being solved. The Forest Protection Associations of this province are demonstrating how successfully co-operative measures can deal with such problems. The injuries by insects and fungi, on the other hand, have, until recently, been practically unrecognized. The actual conditions, however, indicate that these injuries are annually much greater in our forests than that caused by fires. We have a most disheartening example of combined insect and fungous destruction sweeping through the balsam forests of Eastern Canada at the present time. Upon hundreds of square miles of forest the balsam has been very seriously injured or killed within the last eight years, and on large areas of this practically all the balsam is already dead. The injury appears to be spreading rapidly in the balsam and a similar trouble is affecting the spruce in a much smaller degree. How far this is to spread we do not know, but certainly all balsam in infested forests is threatened with destruction. This subject is of the utmost importance to the lumbermen and provincial authorities of Eastern Canada, and should receive immediate and very serious consideration.

It is my purpose to describe very briefly the causes, present status and probable future progress of this balsam injury in the province of Quebec, and to suggest the only methods we have been able to devise for checking its further development. The conditions in Ontario and the Maritime Provinces are somewhat different, but the suggestions with regard to slash disposal apply there with equal force.

About ten years ago an outbreak of the spruce budworm developed in the spruce and balsam forests in this province, and rapidly spread throughout a large part of it. The injury was caused by a small brownish caterpillar, which occurred in myriads and fed upon the foliage of spruce, balsam and hemlock. The adult stage of the insect is a small yellowish brown moth. The moths fly readily and can thus distribute the injury rapidly. This outbreak lasted only three or four years in most parts of the province of Quebec, and then died away, so that the spruce budworm is not now an active agent in the present destruction of the timber.

Injury to the Spruce.

The budworm affected spruce, balsam and hemlock. The injury to the hemlock we shall disregard. The spruce was severely affected, but usually survived the attack. The caterpillars feed chiefly upon the buds and outer foliage on the spruce, particularly upon the upper part of the crown. And while the outer

foliage is reddened and the trees may appear as though scorched, there is usually enough foliage left to carry the trees over the outbreak in fair condition. The injury to the spruce is, however, evidenced in two ways. If trees which have passed through an outbreak are cut, and the annual rings examined, it will be found that for the three or four years of the outbreak there was practically no growth at all. And, also, the many dead tops found on spruce during the last few years were caused as a direct result of intensive defoliation of the apex of the crown by the budworms. Isolated spruces in a heavy balsam stand are frequently very seriously injured or killed outright. It may also be stated that during the past season we have received reports of injury to spruce in Quebec province that indicate either important bark-beetle attacks or the incipient stages of troubles similar to those we now have in the balsam. The matter will be carefully investigated next summer.

Injury to the Balsam.

The injury to the balsam was very much more severe. The caterpillars prefer the balsam foliage and occurred upon it in much greater numbers, so that the balsams were very badly defoliated over large areas. Thousands of trees were killed outright as a direct result of the budworm defoliation, and an infinitely larger number were so badly weakened that after the budworms disappeared it meant a desperate struggle for them to regain normal health even though no other destructive agents attacked them in the meantime. A tree is like a human in this, that when it is weakened by any one disease it is thereby rendered more susceptible to attack by any other distemper that may chance along. And it happened, unfortunately, that these weakened balsams were attacked by four other destructive enemies, two parasitic fungi and two species of bark-boring beetles. The spruce budworm itself has caused its injury and disappeared. It was the primary cause of this whole trouble, and while much of the timber weakened by its defoliation has died through lack of vitality, much of the remainder has since been killed and is now being attacked by these four other enemies.

The Present Enemies of the Balsam in Quebec.

The more destructive of the two fungi is the old-fashioned Ground Rot or Heart Rot, common in eastern balsam since the history of lumbering began. Although it has always been more or less common with us, it seems to me that it has simply run riot in our Quebec woods in these budworm injured balsams. The species is apparently *Polyporus schweinitzii*. It spreads through the root systems, and also through the air by spores borne on fruiting bodies formed above the ground. Injured trees die gradually from the bottom of the crown upwards, showing here and there dead branches, the foliage generally thin, and the trunk and branches bearing an abundant growth of pale green lichens or "moss." Trees showing these characters are almost invariably affected by the heart rot.

The second fungus we have called the Sap Rot. It appears as a white sheet of mycelium growing up-

wards over the roots between the bark and the wood. By the time it reaches and completely surrounds the base of the trunk the sap flow is entirely checked; the tree then dies rapidly and appears as a "red top." This disease is not nearly so common as the heart rot, but it is an enemy well worth watching.

The more destructive of the beetles is the Eastern Balsam Bark-beetle. This tiny, black, hard-shelled beetle, 2mm. long, is abundant everywhere in the bark of balsam slash and in all dying balsams. Both beetles and their larvae cut their tunnels between the bark and sapwood, and when they occur in immense numbers in living trees the sap flow is readily checked and the trees soon appear as red-tops. This has been the chief cause of the red-top balsams so common in this Province during the last ten years. It usually attacks dying bark and weakened trees, but when abundant will kill green timber. Slash and fire-killed trees form its great breeding ground.

The second beetle is a snout-beetle or weevil, which may be called the Eastern Balsam Weevil, one-third of an inch in length and greyish in color. Its eggs are laid in the green or dying bark individually in groups of punctures. The punctures bleed and the balsam drying on the bark in whitish glistening patches betrays the disease. This injury is new to this Province. It was found to be spreading rapidly in green timber in some localities this summer, and will prove without doubt a serious enemy to the balsam.

Present Status of the Balsam Disease.

The present condition of the balsam in relation to this injury appears to be serious enough. The disease is widely distributed east of the Saguenay river, but in some districts it has been particularly destructive, corresponding to the sections most heavily affected by the original spruce budworm outbreak. On some of these areas, extending over many square miles, from 20 to 50 or even 90 per cent of the balsam are already dead or badly diseased, and on parts of these areas the balsam has been almost entirely killed. The most extensive area of which we have knowledge covers the upper waters of the Coulonge and Black rivers, and the country to the northward. On large sections of this country the balsam has been almost entirely destroyed and the reports indicate that the spruce is also becoming affected. The quantity of balsam already killed by this disease in Quebec Province is simply enormous.

What is the Outlook for the Future?

Doubtless many of the trees that have died during the last two or three years were too badly weakened by the budworm to recover in any case, and had simply survived for a few years and finally died. It is therefore possible that the mortality in the balsam will not be so heavy in the future as it has recently been; but on the other hand there is an immense quantity of balsam barely struggling for life at the present time, and the four destructive agents I have already described certainly constitute a very serious menace. A careful consideration of the whole problem indicates that the balsam upon or near these diseased areas is threatened with destruction within the next few years; but how far the trouble will spread into districts not yet affected we do not know. And, in addition, the reproduction that will appear on these areas will be largely balsam, since most of the

present stand is that species, and is likely to meet most unhappy conditions. With the ground, containing the roots and stumps, and also the standing timber rotten with fungi, and with the surrounding country infested by the destructive beetles, what chance will the young trees have to make good timber? The future of the balsam in the infested parts of this Province is certainly far from bright; and if there are any practical measures available for avoiding loss, checking the spread in new areas, and improving the conditions on the badly injured sections, they should certainly be employed without any further loss of time.

Suggestions for Improving the Situation.

There is no panacea, no cure-all, for such a condition as this. The injury already covers such large areas and the mortality has been so high that only a great fire could properly clear this ground for the next crop. The balsam timber is so low in value that measures available when dealing with pine, spruce and Douglas fir are out of the question here. I have only three suggestions to make in regard to control measures.

(1) Utilize the Threatened Balsam. It is evident from what has just been said that the balsam upon the injured areas and also that near it should be utilized as rapidly as is commercially feasible in order to avoid total loss. It is possible that the diseased areas might be dealt with as burns are now treated as regards stumpage dues and diameter limit. The dying trees, like the fire-killed timber, are attacked by the large boring grubs, and the timber entirely riddled, at latest by the end of the second season following the death of the trees; so that prompt utilization is necessary, if the dying timber is to be saved.

(2) Burn the Slash.—There appears to be only one practical method by which we can hope to accomplish anything definite towards checking the spread of the disease, and that is by burning the balsam slash. Slash-burning will not only check the injury in and near the diseased areas, but it will greatly improve the conditions for the next crop. Suppose, for example, that we have a limit of mixed balsam and spruce in fair condition, but that a few acres of the disease has developed on one side of it, where the bud-worm injury happened to be particularly severe. If the injury is neglected it is likely to spread in the surrounding timber. Suppose we log that part of the limit, cutting out all the diseased balsam, and the remaining balsam and spruce down to the diameter limit, and then burn the slash on the snow. The result will be that we destroy practically all the destructive beetles on that area, since they are in the diseased and dying balsam bark, and also we get rid of the greater part of the fungus in the wood above the ground. In addition to that, we have destroyed the slash which would have been a prolific breeding ground for many beetles and fungi for several years. There would still be the fungus left in the roots and stumps, but that is apparently beyond our reach by any practical means. This method would certainly be effective in checking the spread of the disease if the cutting were extensive enough to include all or nearly all of the injured timber. If many diseased trees were left, or if there were many others anywhere in the neighborhood, the result would be less marked; although it would certainly be beneficial,

and in proportion to the percentage of the diseased timber removed and burned.

In addition to the benefit to the standing timber, the destruction of the beetles and the fungi in the slash and the removal of the slash as a future breeding ground would materially improve conditions for the young growth which would follow the cutting. Now suppose that this method were carried out everywhere throughout the Province, consistently, as a definite policy, to the degree at least that all balsam slash were burned the winter it was cut. Is it not evident enough that the practice must have a marked effect in checking the balsam injury in the sections where the cuttings were made, and what is of the greatest importance, in preventing the development of the disease in areas not now affected? It would do more than that. It would do away with a most dangerous breeding ground for destructive insects and fungi, reducing thereby the number of dying trees about old cuttings, and would help to give us a healthier reproduction. There is no doubt at all that any considerable quantity of balsam slash will constitute a serious danger to neighboring balsam timber, even though the latter is still healthy, and this is particularly true for the next few years, which will determine how far this injury is to spread.

(3) Increase the Percentage of Spruce in the Stand.—A still better method in the example I used a few minutes ago would have been to cut out absolutely all the balsam of pole size and over, leaving on the ground only young balsam and the spruce below the diameter limit, and then to burn all the slash. I have read Mr. Hoffman's paper on the effect of seed trees on reproduction, and probably we have all felt that his deductions are true for the eastern woods also. There can be little doubt that the reproduction that springs up must come mainly from the seed stored in the soil. But I still feel that if all balsam seed-trees were removed and spruce seed were falling each year, well scattered over the area, that the spruce seed would surely modify the following reproduction to a considerable degree, and give a higher percentage of spruce by the time the crop reached timber size. This question is of great importance and leads to the last point I wish to make. We have discovered in our studies of the budworm outbreak, particularly in the work in New Brunswick, where Mr. J. D. Tot-hill, of the Entomological Branch, has also been studying the balsam problem, that the sections carrying a high percentage of balsam were most heavily injured. In other words, the higher the percentage of balsam in the stand, the heavier the budworm injury has been to both balsam and spruce. If, then, we can affect the reproduction by any method of logging so as to give a higher percentage of spruce in the stand, by just so much we shall be insuring against serious injury from the next budworm outbreak; for other outbreaks will surely develop, at least in the lifetime of the next crop of balsam and spruce. If our foresters can devise any method of lumbering by which the percentage of spruce in the coming reproduction can be increased they will be obtaining two most important results, giving us more valuable wood as well as more healthy timber.

The argument in favor of burning pine and spruce slash is very nearly as strong, through similar reasons; but the practical difficulties in the way are, in this case, apparently somewhat greater, although

probably not impossible of solution. If we could have an agreement between the Governments of Quebec, New Brunswick and Ontario, by which balsam and spruce slash from pulpwood cuttings should be burned each year everywhere throughout those provinces, I do not believe the lumberman's expense would be increased at all by the slash burning; the cost would be carried over to the consumer, where it properly belongs. Pine cuttings and spruce cuttings made chiefly for lumber require separate consideration, since the lumber must meet competition from southern and western forests. Even for this condition there are several solutions, one of which would be for the Provincial Governments to estimate the cost of burning the slash and to reduce the amount of the stumpage dues so as to reimburse the lumbermen for the part, or all, of the extra cost incurred by slash burning.

These are merely suggestions. The real problem is infinitely greater than costs. It is simply this: that our balsam forests are dying wholesale; that if the mortality continues to spread as rapidly in the next ten years as it has in the last ten we shall by that time have very little more balsam slash to burn, in Quebec Province at least. That is the great problem. If slash burning will help materially to check the trouble, and I have set forth here the reasons why I believe it will, by all means let us burn the slash. As I see it now the question has come to be, not, "Shall we burn slash?" but, "How can we burn the slash to best advantage?"

Finally, slash is the garbage of the woods; and just as the city garbage must be destroyed to protect the health of the citizens, so should the forest garbage be burned for the protection of the trees. How can we expect the remaining timber to be healthy when each year we distribute throughout the Province many square miles of this rubbish, the finest breeding ground for insects and fungi that could possibly be conceived?

As a preventive and insurance against insect and fungus troubles the slash should always be burned; but at this time, when slash burning will without any doubt go far towards checking the balsam disease in regions where it has only started, and in preventing its development in areas that have thus far remained healthy, particularly at this time, when it is so essential that we find some method for fighting this disease, let us develop a way to utilize the only means that appears to be available, and Burn the Garbage.

REPRODUCTION OF FORESTS.

A systematic study of the rate of reproduction and growth of Canadian forest trees of the commercial species has been undertaken by the Advisory Council for Scientific and Industrial Research by the Council for S. & I. Research, through scientific surveys of some eighty square miles of an old cut-over lumber district on the Petawawa Military Reserve. The data being secured will in the course of a few years give, for the first time, the essential definite information enabling the Dominion and Provincial Governments to inaugurate on a scientific and practical basis a scheme of re-forestation paralleling the best results obtained in the past in Europe. Our forest wealth, now in danger of exhaustion through reckless waste and disregard of adequate conservation systems, can only thus be preserved as a great and permanent national resource.

Census of Pulp and Paper Industry, 1917

(Concluded from last Issue.)

MISCELLANEOUS EXPENSES OF PRODUCTION.

Miscellaneous expenses, taken for the first time since the Decennial Census of 1901 are given in Table XX. The principal items are unclassified sundry expenses amounting to \$3,667,765 or nearly 34 per cent. of the total, and ordinary repairs to buildings and machinery amounting to \$3,391,960 or 31.4 per cent. Rent of power constituted 9.5 per cent; taxes (internal revenue, war, etc.) 7.4 per cent.; insurance 7.37 per cent.; taxes (provincial and municipal) 6.6 per cent.; all other

Items of Expense	Pulp Mills.	Pulp & Paper Mills.	Paper Mills.
Rent of Offices, Works, and machinery	14,734	166,713	9,899
Rent of Power	112,300	867,833	47,548
Insurance	164,271	609,418	23,630
Taxes:			
Internal Revenue, War, etc.	158,967	585,008	54,455
Provincial, Municipal, etc.	141,533	560,233	18,155
Royalties Use of Patents, etc.	666	1,878	12,283
Advertising Expenses	9,873	22,307	6,753
Travelling Expenses	44,147	100,621	20,423
Ordinary repairs to buildings & machinery	799,225	2,378,938	213,767
All other sundry expenses	1,042,568	2,282,314	342,883
Total	2,488,314	7,575,263	749,796

er expenses, including rent of offices, works, etc., royalties and use of patents, advertising and travelling expenses, 3.7 per cent.

IMPORTS AND EXPORTS.

The Tables presented in the Report (tables XXI, XXII, XXIII, XXIV, XXV, and XXVI) are designed primarily to illustrate the relation of home manufactures to exports of this most important raw material.

The value and per cent. distribution of the wood-pulp imported into Canada is shown in Table XXI, by countries for the calendar years, 1915, 1916 and 1917. It will be seen that importation from European countries has ceased by reason of the war, and is confined

Table XXI.—Imports of Wood-pulp for the Calendar years 1915, 1916 and 1917 by Countries.

Countries from which imported	1915.	1916.	1917.
	Value.	Value.	Value.
Total value of imports	\$423,331	\$552,002	\$587,369
United States	316,843	552,002	587,369
Great Britain	745	.....	.....

to the United States in 1916 and 1917. The increase in value during 1917 over the previous year amounted to \$35,367 or a little less than 6.5 per cent. Quantities are not available for the years mentioned.

Table XXII gives the quantity and value of the exports of wood-pulp for the calendar years 1915, 1916 and 1917 to the United States, Great Britain, France, Japan and all other countries, classified under the

heads of mechanical and chemical. The total quantity exported in 1917 was 511,803 tons of the value of \$26,192,906, of which 250,403 tons valued at \$7,082,206 was mechanical, and 261,760 tons valued at \$19,110,700 was chemical pulp. There was a decided fall-

Table XXII.—Exports of Wood-pulp by Countries for the Calendar years 1915, 1916 and 1917. (Abbreviated. Given to show distribution.)

Kinds of pulp & countries to which exported.	Quantity ton.	Value. \$	Average value
			per ton. \$
Total wood-pulp exported	511,803	26,192,906	51.17
Mechanical pulp	250,043	7,082,206	28.32
Chemical pulp	261,760	19,110,700	73.01
Total to United States	473,849	23,049,292	48.64
Mechanical pulp	248,375	7,048,306	28.38
Chemical pulp	225,474	16,000,985	70.96
Total to Great Britain	20,875	2,037,017	97.58
Mechanical pulp . . . . .	.....	.....	.....
Chemical pulp	20,875	2,037,017	97.58
Total to France	1,668	33,900	20.32
Mechanical pulp	1,668	33,900	20.32
Chemical pulp . . . . .	.....	.....	.....
Total to Japan	13,762	933,350	67.82
Mechanical pulp . . . . .	.....	.....	.....
Chemical pulp	13,762	933,350	67.82
Total to all other Countries	1,649	139,347	84.50
Mechanical pulp . . . . .	.....	.....	.....
Chemical pulp	1,649	139,347	84.50

ing off in the exports of mechanical pulp, amounting to 79,709 tons, though the value shows an increase of \$1,432,841. On the other hand there was a marked increase in the export of chemical pulp, amounting to 32,613 tons and a correspondingly marked increase in the value amounting to \$7,415,823. More than 92.5 per cent. of the quantity and 88 per cent. of the value of all pulp was exported to the United States. The average value per ton for all kinds of pulp exported was \$51.17 in 1917 as compared with \$31.03 in 1916 and \$25.48 in 1915. Mechanical pulp rose from \$15.67

Table XXIII.—Exports of Pulp-wood from Canada in the calendar years 1915, 1916 and 1917 for each Province by Quantities and Values. (Abbreviated).

Provinces.	Quantity.	Value.
	1917.	1917.
British Columbia	329	747
New Brunswick	156,255	1,145,967
Nova Scotia	770	5,498
Ontario	161,652	1,166,316
Quebec	698,839	5,603,894
Canada	1,017,845	7,922,422

per ton in 1915 to \$17.13 in 1916, and \$28.32 in 1917. Chemical pulp which was \$38.36 per ton in 1915 rose to \$51.04 in 1916 and \$73.01 in 1917.

The quantity and value of pulpwood exported by provinces for the calendar years 1915, 1916 and 1916 is given in Table XXIII. Though the quantity dropped

by 50,362 cords in 1917, the value increased by \$1,055,753, owing to the rise in prices.

No pulpwood is imported into Canada.

In Table XXIV which shows the production, manufacture and export of pulpwood, the statistics for production are obtained by adding the quantities used in manufacture to those of exports for the calendar year 1915, 1916 and 1917. The table shows also the value per cord and the per cent. distribution of the pulpwood produced between manufacture and export. It will be seen that the production has increased from year to year in quantity and value, and in average price per cord. The quantity used in home manufacture is gradually increasing; in 1915 the percentage manufactured was 59.7, in 1916 it was 62.3, and in 1917 it was 70.4.

Tables XXV and XXVI deal with the exports and imports of paper as such. They do not deal with articles manufactured from paper. The total value of paper imported increased from \$2,402,557 in 1915 to \$4,204,968 in 1917. The total value of paper exported in 1915 was \$18,430,013, while the total value exported in

CANADIAN PAPER AGENT FOR LONDON.

As a result of the conference in Ottawa last Thursday between the pulp and paper interests and Lloyd Harris, the Canadian Trade Commissioner in London, who is visiting Ottawa at present, a meeting of the Canadian Pulp and Paper Association is to be held on Thursday, June 5th, for the purpose of selecting a representative to go to London for the purpose of keeping in touch with the market there as well as with the Canadian Trade Commission in that city.

In the course of the meeting Mr. Harris strongly recommended such action as one of the best methods of the Canadian pulp and paper trade deriving the benefits which might be obtainable through closer contact with and understanding of the conditions there. It seems probable that this step will be taken.

One of the chief obstacles to the Canadian export business in that trade has been the problem of securing steamship accommodation. Opportunities to secure space have been lost, it was pointed out, through lack of machinery to grasp them when they arose and thus chances of making shipments to advantage have been lost. The matter of high rates is also an obstacle, but it is believed by the trade that these will come down eventually.

Should a representative be appointed to go to London one object would be to watch the freight situation and immediately communicate the facts to Ottawa. These could then be at once laid before the pulp and paper trade and prompt action secured.

The general feeling in the trade was that the shipments of pulp and paper to England could be largely increased with the provision of the machinery suggested.

Table XXIV.—Production, Manufacture and Exports of Pulpwood compared for the calendar years 1915, 1916 and 1917 by Provinces.

Schedule	1917			Per cent distribution of pulp-wood		
	Quantity — Quantité	Value — Valeur	Value per Cord — Valeur par corde	Pourcent de répartition bois à peulpe		
	Cord	\$	\$	1915	1916	1917
Canada						
Production.....	3,122,138	26,739,905	8.58	100.0	100.0	100.0
Manufacture.....	2,194,334	16,817,453	7.94	59.7	62.3	70.4
Export.....	1,017,534	7,372,422	7.25	40.3	37.7	29.6
Quebec						
Production.....	1,608,703	15,155,326	9.38	100.0	100.0	100.0
Manufacture.....	1,106,869	9,551,432	8.60	52.8	54.0	63.0
Export.....	498,639	5,603,094	8.85	47.2	46.0	37.0
Ontario						
Production.....	897,343	8,596,671	9.58	100.0	100.0	100.0
Manufacture.....	735,691	7,430,355	10.10	70.4	51.0	86.4
Export.....	161,652	1,166,316	7.21	29.6	19.0	13.6
New Brunswick						
Production.....	251,841	1,579,449	7.14	100.0	100.0	100.0
Manufacture.....	105,556	733,492	6.95	49.1	34.4	39.0
Export.....	156,285	845,957	7.33	50.9	65.6	61.0
British Columbia						
Production.....	135,143	949,510	7.17	100.0	100.0	1.000
Manufacture.....	134,814	968,783	7.19	100.0	99.9	99.9
Export.....	326	747	2.30	1	1	1
Nova Scotia						
Production.....	19,054	138,949	7.28	100.0	100.0	100.0
Manufacture.....	18,324	133,451	7.28	96.3	79.4	96.0
Export.....	730	6,498	7.14	12.7	20.6	4.0

1917 was \$35,774,636. That is our imports of paper in 1917 increased in value over those of 1915 by \$1,802,411 or by 75 per cent., while our exports of paper in the same period increased by \$17,344,623 or by 94.1 per cent.

CANADIAN VISITS GERMAN PAPER MILL.

Joe Gill, an employee of the Laurentide Company, who has been overseas, had the interesting experience of visiting a large German paper mill at Bergisch-Gladbach, Rhineland. The general manager escorted him through the whole plant and pointed out all items of interest. This plant is known as J. W. Zanders, was established in 1822, and in addition to straw, esparto and wood pulps, manufactures a large line of special papers. There are seven machines and about 1,700 employees. The daily production is 80 tons. The ground-wood mill is equipped with Voith magazine grinders.

VETERAN REPRESENTS WATEROUS COMPANY.

The Waterous Engine Works Company of Brantford, Ont., has appointed Sergt. Charles Kendall to represent it in British Columbia. Sergt. Kendall enlisted in the 67th Battalion "Western Scots," Sept. 1, 1915, and went overseas in March, 1916. His battalion landed in France on August 13, 1916, as pioneer battalion to the 4th Canadian Division, and went at once into the Ypres salient and six weeks later was transferred to the Somme.

Sergt. Kendall was with the battalion until the later part of October, when he was ordered to report to divisional headquarters as draughtsman in the intelligence department. He assisted in preparing the plans for capturing Regina Trench and later on the plans for Vimy Ridge. One month after the famous ridge was taken he was transferred to the Forestry Corps at the request of Gen. McDougall and did duty with the different forestry companies, placed in the areas next the front-line trenches, until October 28, 1918, when he was seriously injured in a collision between his motorcycle and a fast moving railway engine between Arras and Doullens.

After six months in various hospitals in France and England, Sergt. Kendall arrived in Vancouver at 10.30 p.m. Thursday, on the military hospital train, and before noon next day Mr. C. H. Waterous had placed him in charge of their interests in British Columbia, the position held by Mr. Hugh Gilmour for so many years. Sergt. Kendall has had many years' experience in sawmill construction and operation, as well as in the pulp and paper industry.

THE STORY OF THE C. P. & P. A. TRADE MARK.

The Canadian Pulp & Paper Association recently started on a quest for a trade-mark such as could be used for the purpose of labeling and identifying all the pulp and paper products made by its members. The Association invited suggestions from everybody interested and offered to pay \$100 for the suggestion adjudged best adopted to the purpose in view, as well as to pay the price placed upon it by the person submitting it.

The result was that over 150 designs, some of them very artistic in conception and showing the result of a great deal of work in their development, were submitted. Prof. Ramsay Traquair, of McGill University, president of the Arts Club of Montreal, and Mr. F. W. Stewart, president of the Montreal Publicity Association, were invited, together with Mr. A. L. Dawe, secretary of the Association, to pass upon the entries. After spending considerable time in judging the respective merits of the many designs submitted, the judges unanimously agreed that a design submitted by Mr. Harold McEvers, a student in the Department of Architecture of McGill University, Montreal, came nearest to meeting all the requirements.

The winning design shows an idealized spruce tree (the basis of the Canadian pulp and paper industry)



enclosed in a triangle, around which the words, "Canadian Pulp & Paper Association" are disposed. At the back of the tree appears a rising sun whose radiating rays spread out to the inner lines of the triangle. In the right and left corners appear maple leaves, a Canadian national emblem, made universally familiar by its appearance on the shoulder-straps of the Canadian soldiers.

Used as a label and in other forms where the use of colors is practicable, the trade-mark will appear in three colors, the tree and the maple leaves in green, the orb and its radiating rays in red or orange and the rest of the design in black. When reproduced in this form the design appears very effective, while even in subdued black and white it has a distinction and character quite impressive.

The design is to be registered as a trade-mark. It will be used on all packages and boxes, etc., containing Canadian-made good paper and pulp products. In order to familiarize the Canadian public with its appearance, the Association is planning an extensive advertising campaign in which the merits of Canadian-made paper will be extolled.

SIR GEORGE BURY HEADS WHALEN CO.

Sir George Bury, until recently vice-president of the Canadian Pacific Railway Company, has been elected president and chief executive of the Whalen Pulp and Paper Mills, Ltd., with offices at Vancouver, where he was due to arrive last Friday. James Whalen, the former president, who has other large financial interests on the Pacific Coast, in relinquishing his position retains the chairmanship of the board of the company. George Whalen, who has been managing director will probably devote his time entirely to the organization of export business connections. The entrance of so prominent an executive as Sir George Bury will be welcomed in pulp and paper circles as another indication of the outstanding importance of the industry. It is understood that further interesting and favorable announcements will be made shortly in regard to the Whalen Co. financing, in which Montreal and Chicago interests are said to have taken a very large interest.

It is a good thing for British Columbia to have men like Sir George identified with Pacific industries. One of the principal difficulties is ocean service and efforts must be made to bring in return cargoes from the Orient and elsewhere by the vessels that take out Canadian goods. For a territory with a population less than that of Montreal, the Pacific Province does a lot of business. The Whalen company is among the concessions contributing largely to the prosperity of the province and in this connection it may be said that Mr. McMaster, who was James Whalen's right hand man at Port Arthur, has done good work in solving problems of labor, production and transportation. The company is now making 200 tons of sulphite daily and before long will be doing business all over the globe making use of the Panama Canal.

The Port Alice mill is one of the few pulp plants to produce to capacity from the start. It was designed by V. D. Simonds for 60 tons daily and has regularly made 72 tons, a part of which is bleached.

NEW MATTAGAMI STOCK OFFERED PUBLIC.

In connection with the \$2,000,000 issue of Mattagami Pulp & Paper Company, Limited, 7 per cent. Convertible Sinking Fund Mortgage Debenture Stock, which they are offering the public, Greenshields & Co., make a few comments, both in general and in particular.

Pulp and paper is Canada's greatest industry—an industry in which our wealth of raw material and water power gives us the advantage over the world. Investors who have bought Canadian pulp and paper securities when the companies they represent were in their early stages have secured high yields and have eventually made large profits.

The Mattagami Company hold 965 square miles of remarkable timber limits so laid out in the Mattagami River Water Shed as to enable the company to bring its wood to the mill at the lowest cost that we have found in our experience with Canadian pulp and paper companies. The economical water power development at the company's mill site provides the other chief factor in the low cost of operation. Canadian companies as a class can manufacture pulp and paper to-day at a lower cost than any other country, but we have not found any company better situated for this than the Mattagami.

Recent Development in the Cornish China Clay Industry

(By our Cornish Correspondent.)

The mariner who has passed through the gale appreciates the calm which follows; indeed, he who best knows how to value and appreciate the calm is he who has for a long period known no other but storm, cloud, rain and cold. The war automatically closed several of the best markets; money due could not be recovered from enemy countries, and Russia was economically a closed chapter. There were comparatively speaking, few sales, and markets were more or less restricted. Buyers were swamped with offers, and these naturally forced down prices, as always happens when supply exceeds demand; and the prices realized for clays were too often than not considerably below the cost of production. Each producer hoped that the war would be over sooner, and went on selling his clay for less than he produced it for, and was piling up losses in such a way that many firms were faced with imminent ruin. Workmen received inadequate wages. They knew that their employers were losing money and realized that in many cases an increased wage bill would mean the closing down of many works.

Soon these clouds broke, and the sun began to shine once more on the China clay industry. The producers threw aside their old prejudices and jealousies, and determined to pull together. The world required a certain amount of China clay, and no more for the time. "We will produce all that is required, and we will sell all that is required, but we will see to it that each producer shall have his own share of the business and no more, so that all in the trade can live," they said. The paper makers and all other manufacturers using China clay are prospering, and accumulating profits, and therefore it became imperative for the China clay merchants to charge fair prices with the costs of production, so that masters and men may pull through until brighter times come again. So the company called the Associated China Clays, Ltd., was formed to distributed business evenly among all producers on a common basis of normal capacity, and to regulate prices. There had been minor difficulties and slight differences of opinion among a few producers on the question of policy, but the Associated China Clays, Ltd., has passed through its first year of working—the most trying year in the history of the industry—very satisfactorily, indeed, and all the members have remained loyal to their new institution. The result is that with economy, all producers can just make both ends meet, and the various industries requiring China clay receive supplies they need at prices that are not unduly high compared with the cost of production and the cost of other raw materials.

Looking back over the period they passed through before the formation of the Associated China Clays, Ltd., the China clay producers know how to assess the value of that company to the industry, and they are pleased with their united action. The unanimity existing among the producers has rendered many things practicable that otherwise would have been difficult, if not altogether impossible. With the exception of one or two small firms representing less

than three per cent. of the trade, all are united in this organization. All the employees are united in their "Workers' Union," consequently when the Government's Whitley Commission scheme was called into existence the China clay industry was one of the very first of all the industrial concerns in the kingdom to set up its National Joint Industrial Council. This Council, consisting of ten employers and ten representatives of the employees, has done excellent work. It has established a bond of good feeling between masters and men, and has been able to wipe out many of the anomalies which had hitherto existed. On more than one occasion this Council has made its existence felt at the very centre of Government administration. Such is the report of the first year's existence of the Associated China Clays, Ltd., and no doubt in the forthcoming period of reconstruction, this combination will play an important part in the resuscitating the Cornish China clay industry to its former world-wide standard of activity.

Since my last notes the spirit of combination has made a tremendous advance, and the amalgamation of three of the very largest firms of China clay and China stone producers have become an accomplished fact. The three firms concerned must be well known to all readers of the Pulp & Paper Magazine, and it will mark yet another important era in the Cornish China clay industry. They are The West of England and Great Beam China Clay Company, Ltd., of St. Austell, Messrs. Martin Brothers, of Plymouth, and The North Cornwall China Clay Co., Ltd., St. Beward, Cornwall, and the business of these three will be conducted under the style of English China Clays, Limited. The operations of the premier company, The West of England and Great Beam Co., Ltd., are the most formidable in the whole district, and include clay mines producing such well known clays as "Dubbers" and "Dorothy" and other equally well known works which are situated at Trethosa, Little Johns, North Carloggas, Kernick, Hallow, Hendra, New Hendra, Great Beam, Carrancarrow, all near St. Austell, Cornwall, and also at Plympton, Devon; China stone quarries at Hendra, near Nanpean. They also operate cooperages for the manufacture of casks for packing clay for the continental and colonial markets, if required, brick and tile works at Carloggas, and ground China stone at Pons Mill, St. Blazey. The yearly production of this firm in 1900 was considerably over 100,000 tons, which is sufficient to show the great strides made even in those days, but it was not accomplished without much spade-work. With increasing railway facilities the output of the "West of England" soon grew to over 200,000 tons per annum, which was the high water level achieved just before the war. Whilst it would be impossible to get the railway to each of the works already mentioned, the firm did the next best thing by erecting their drying kilns alongside the railway, and the clay conveyed thereto from the works in its liquid form in earthenware pipes.

At Drinnick Mill Station Nanpean, the company have a very large drying depot for several of their best works, which effects a considerable saving in the

cartage of coal as well as the cartage of clay. Consequently the cost of production is reduced very appreciably. With modern labor saving appliances such as the steam navy for removing the over-burden around the pits, and various other electrical contrivances as well as an improved system of drying, the company have already effected considerable economy. Even since the war one of the principal engineers of the firm has informed me that their newest principles for drying have reduced the consumption of coal by more than 30 per cent, a saving that cannot but be appreciated particularly during the coal crisis. The whole of the works are connected with the head office at St. Austell by a private telephone.

Messrs. Martin Brothers, of Plymouth, although far distant from the activities of mid-Cornwall, are nevertheless quite in touch with the industry by wire, and there has always been an ever increasing communication between them and the Cornish clayopolis. This firm is somewhat akin to the West of England Co. in that it is more or less of a family institution. The late Mr. Thomas Martin was the managing director for a great many years, and under his wise supervision their works at Leemoor, Devon, Goonbarrow, (St. Austell), Burgotha, Virginia, Little Treviscoe, in St. Stephens in Branwell, Cornwall, were very largely developed. Upon the death of Mr. T. Martin, the mantle of responsibility fell on Mr. Reginald Martin, who has maintained the best tradition of his ancestors, and he has succeeded in enhancing the reputation of the firm throughout the world. The most important operations of the firm are at Lee Moor, Devon, where they have also brick and tile works of large dimensions, and China stone quarries at St. Stephens, in Cornwall.

The North Cornwall China Clay Co., Ltd., although the youngest of the three amalgamating firms, are not by any means the least known. This company have only one pit, which is known to be the very largest of its kind in existence, and it is situated near Cornwall's very highest altitude "Rough Tor," but the vast and undeveloped clay bed here concealed is sufficient to afford every possibility of becoming as productive as the other firms together in course of time. The clay from Stannion Moor is conveyed to the nearest railway junction at Wenford, about 9 miles distant, where the company have erected one of the finest and best equipped range of drying kilns to be seen in the industry. The normal yearly outputs of the three firms combined, as at present fixed by the Associated China Clays, Ltd., is 430,000 tons. The normal China stone output amounts to another 25,000 tons, and the ground China stone an additional 5,000 tons per annum.

Mr. Reginald Martin has been appointed the chairman of the new company, The English China Clays, Ltd., and he is one of the three managing directors. He became actively associated with Martin Brothers in the year 1889. After the death of his father he had the assistance of his brother, Mr. Claude Martin, but on the outbreak of war the latter obtained a commission as Lieutenant in the Coldstream Guards, and was killed in action at Cambrai in 1917, and since his lamented death Mr. Reginald Martin was obliged to undertake the sole responsibility of the firm's great business. The prominent position that has been achieved by this firm fully demonstrates his enterprising activities, and business capacity, which should

serve him well in his new sphere. Mr. Reginald Martin is a vice-chairman of the Associated China Clays, Ltd.

Mr. T. Medland Stocker, J.P., another of the newly appointed managing directors, is also well known not only in the St. Austell district, but also in the many home, continental and colonial markets. He is a son of the late Mr. Thomas Stocker, (one of the pioneers of the China clay industry). He entered the service of his family's firm, The West of England China Clay Co., in 1893, and upon the death of his father he became chairman and managing director.

Mr. Walter Sessions, is the third managing director of the new combination, and will, we understand, be principally engaged in the sales department, a position which very few men are better adapted for, or are more successful in. Following a meritorious business career, Mr. Sessions applied his acumen to the North Cornwall China Clay Co., Ltd., with eminent success, with the result that the firm soon became reconstructed on a sound basis, and made commendable progress.

The intentions and policy of this new company are naturally much commented upon locally, and no small amount of curiosity is created even among the other China clay producers as to their future relationship with the producers' association. I am informed, however, that the object of the new company is to work in harmony with the other clay producing firms, and for the mutual advantage of all engaged in the industry and that the newly formed English China Clays, Ltd., intends heartily to support the policy of the Associated China Clays, Ltd. The advantages of co-operation amongst China clay producers have been exemplified on more than one occasion during the past few years. Through the unprecedented advance of living there would have been a labor crisis but for the formation of the producers' association, and the inception of the National Council of the China Clay and China Stone industry. The former secure better prices, and the latter a more amicable relationship between the employers and the employed. Wages have been increased from 7d. per hour to 1s. 1d. an hour for the ordinary day laborer. It is observed in the memorandum of association that the fullest powers have been obtained to enlarge the scope of business, and a firm of this magnitude should be enabled to conduct research work on a large scale to the mutual advantage of the firm and the trade and district generally.

Following close upon this combination I am authoritatively informed that the well known firm of Messrs. H. D. Pochin & Co., have just acquired the China clay properties of Messrs. J. W. Higman & Co. The latter firm have been in the clay trade for a great number of years, the founders of this firm being among the early pioneers of the industry. Mr. J. W. Higman, J.P., the head of Messrs. J. W. Higman & Co., has been very prominently associated with the China clay industry as the chairman of the Associated China Clays, Ltd., and the chairman of the National Council of Employers and Employees. The principal mine of this firm is at Gunheath, near St. Austell. Messrs. H. D. Pochin & Co., the purchasing firm, which are well known to North American paper makers, are not only large China clay mine proprietors, but have been established as a big chemical manufacturing firm for over 100 years. Messrs. Pochin's best mine is at Gother, St. Dennis, where

very large extensions have taken place in recent years. At Halviggan, St. Mewan, adjoining the parish of St. Austell, very important developments have taken place, including the erection of a very large drying kiln and settling pits at Burngullow Station, on the main Great Western Railway line. In recent years the firm have been directing considerable attention to their West Cornwall properties in the Penzance district. Their "Leswidien" and "Baleswidien" mines are producing some of the whitest clays on the market, and now the war is over greater extensions are contemplated. Better shipping facilities have been constructed by the firm in the Penzance Harbor, and similar progress has been noted with the firm's other works, near Liskeard. This firm's normal yearly output as fixed by the producers' association, of which they are members, is 109,671 tons, making them the fourth largest producing firm. Their latest acquisition will increase their capacity to 134,568 tons per annum. Thus, under the new conditions, Messrs. H. D. Pochin will become the third on the list. The three leading producing firms are as follows: The English China Clays, Ltd., 430,000; Messrs. John Lovering & Co., 151,000 and Messrs. H. D. Pochin & Co., 134,568 tons per annum.

Observing the value of China clay as an important raw material in many articles that issue from chemical factories and laboratories, the importance of Messrs. H. D. Pochin's large holdings in various clay-works cannot be over-estimated. Mr. H. Stanley Pochin is the managing director and as a capable administrator he is second to none.

PROPORTIONATE RATES ON MIXED CARLOAD FREIGHT.

Canadian pulp and paper manufacturers are advised by Mr. G. P. Ruiekie, their transportation expert, that supplements have just been received to freight tariffs and providing for the application (proportionately) of respective carload rates on mixed cars containing articles in Groups A and B to points in Canada east of Port Arthur with a minimum weight of 40,000 lbs. per car. Under this arrangement a mixed car of newsprint, wrapping and writing paper, for instance, will be charged Group A rate on newsprint and wrapping, and Group B rate on writing. Heretofore such a mixture was charged the highest, or Group B rate on the entire car.

So far Mr. Ruiekie has only received the C. P. R. and the G. T. R. tariffs giving effect to this arrangement, the C. P. R. issue being supplement 17 to Tariff E-3081 and the G. T. R. supplement 24 to Tariff CP-128. No doubt similar tariffs have been issued by other railways publishing rates from Eastern Canadian mills, and if not already received, copies could be obtained from the railways.

A mixed car containing different articles, all of which are included in Group A of the tariffs, will continue to take Group A rates subject to the highest minimum weight applicable in the tariff on any one article in the car. Similarly mixed cars containing articles, all of which are included in Group B will take Group B rates, but on mixed cars of articles in Groups A and B the respective carload rates will be protected, and as pointed out above this is a privilege which has heretofore been denied by the railways.

CARGO SPACE RELEASED BUT NOT AVAILABLE.

The advantage of belonging to the Pulp and Paper Association is shown afresh in the following communication from the Association's transportation specialist. It illustrates the value of having a man right on the job. Many instances could be cited of similar prompt and efficient service.

"In this week's Pulp and Paper Magazine it is stated that some of the larger paper manufacturing companies have been notified that commencing June 1st, the British Government will reserve only 50 per cent. of the tonnage instead of 70 per cent. as at present. This, I understand, is correct, but as far as we can find out here, the additional space released by the British Ministry of Shipping for the month of June is practically all booked up with meat and other food stuffs so that the additional space referred to as being released for commercial traffic is not likely to benefit this industry. It is felt, however, that by the end of June the bulk of last year's grain crop moving overseas will be out of the country and opinions are expressed that commencing the 1st of July the amount of space requisitioned by the British Ministry of Shipping will be still further reduced, so that chances for securing space for commercial freight should then be somewhat better."

"Ocean rates are still being maintained on a high basis and it has been stated that lower rates are obtainable from United States Seaboard ports. This, I understand, is correct, but only in so far as bottoms owned by the U. S. Shipping Board Emergency Fleet Corporation are concerned. These boats represent a comparatively small proportion of the total number sailing from U. S. ports, and I understand that their space is practically all taken up with U. S. freight. So far as British bottoms sailing from U. S. ports are concerned, the British Ministry of Shipping requisition the same amount of space as they do on traffic from Canadian ports, and it is claimed that vessels owned independently of the U. S. Emergency Fleet Corporation, are not feeling the competition of the lower rates, being protected by the latter, and are maintaining their rates on the same level as is being charged from Canadian ports, and are being offered more traffic at these rates than they can accommodate."

OTTAWA NOTES.

The almost certain adjournment of the previously announced session of the Judges of the Paper Control Tribunal which heretofore had been taken as granted would be held on June 4th or 5th, was the chief item of interest to both the manufacturers and publishers up to early this week. According to the best information which could be obtained from most reliable sources at Ottawa up to early this week there is probably not going to be a sitting of the judges until around June 16th.

Outside of the labor situation, which did not show any great amount of unrest in the pulp and paper mills at Ottawa, there was little or nothing to comment upon. The water in the Ottawa river is now receding, and the danger of a general fire-up of the John R. Booth and E. B. Eddy pulp, sulphite and paper mills, was to all appearances past.

Do not allow oil to drip upon the belts. It destroys the life of the leather.



UNITED STATES NOTES

Jacob De Julin, president of the Finnish Cellulose Union, Helsingfors, Finland, visited New York last week in connection with an important mission concerning the food supply for his Government. Incidentally Mr. De Julin interested himself in matters looking to the development of a market in America of the pulp manufactured in his country. All the pulp mills in Finland, fifteen in number, with a capacity of 200,000 tons, are included in the Finnish Cellulose Union. This organization is now planning to increase its existing facilities with a view to reaching an annual output of 300,000 tons, 100,000 of which will fill domestic needs in Finland, leaving the remainder available for export purposes. Much of the surplus Finnish pulp was exported to Russia before the war, but owing to the disturbed conditions in that country, an outlet for it is being sought elsewhere, and according to Mr. De Julin, the Finnish Cellulose Union will make a special effort to develop a market in America.

The first full cargo of wood pulp to arrive in the United States from Finland since 1915, arrived in New York on May 5th on the American steamer "Garfield." It was consigned to the Lagerlof Trading Company, Inc., of New York, which before the war handled most of the chemical pulps imported into the United States from Finland. The consignment consisted of somewhat over 2,000 tons, and was carried to America by the "Garfield" on her return trip from Finland, where she had gone with a cargo of food-stuffs for the starving Finns.

According to reports received by the Bureau of Foreign and Domestic Commerce at Washington, there is need of paper in Bordeaux, France, little having been imported or manufactured, during the war, and a requisition being also placed by the French Government upon paper during that time. Before the war a considerable amount of paper was imported by France from Germany and some from Italy.

The Hammermill Paper Company, at Erie, Pa., recently held celebrations in observance of the twentieth anniversary of the establishment of its plant there. Two ceremonies were combined in the celebration, the first of which was the unveiling of a bronze tablet presented by the employees as a testimonial to Ernest R. Behrend and Dr. Otto F. Behrend, respectively the company's president and treasurer, and the second consisted of the presentation of diplomas and gold watches by the company to all those of the employees who have been with it for the entire twenty years. There are ten who hold this record.

Export of dyes and dyestuffs from the United States during April were valued at \$1,451,442, as is shown by the figures just made public by the Bureau of Foreign and Domestic Commerce. Exports during April of last year were valued at \$1,070,380. During the 10-month period ending with April the value of such exports was \$15,518,076, as compared with \$13,966,193 during the same period last year, and \$8,683,239 during the same period the year before. Dur-

ing April total exports of chemicals, drugs, etc., had a value of \$10,745,585, as compared with \$12,758,496 during April of last year. During the ten month period, ending with April, the value was \$126,083,053, as compared with \$152,279,359 during the same period last year, and \$152,396,786 during the same period the year before.

The thirty-two mills of the International Paper Company, which have been shut down since May 11, as the result of the walk-out of paper workers, resumed operations Monday of last week. A conference between union leaders and the company officials held later in the week at the Murray Hill Hotel in New York, is believed to have resulted in an understanding that will continue the mills in operation.

A case of interest to paper manufacturers and newspaper owners relative to contracts for paper has just been decided in the United States District Court at Boston. Two papers, the Lowell Sun, and the Worcester Post, had decided against them two suits whereby they sought to recover for an alleged breach of contract on non-delivery of paper. W. H. Parsons and Company, with whom both newspapers had contracts for paper, was the defendant in the action. Attorneys for the newspapers contended that by not making any objection to the curtailment of the deliveries each month, the paper company waived the contract terms, and that its silence was equivalent to being willing to continue delivering paper. But the lawyers for the Parsons firm argued that the silence meant that both parties agreed to the breaking of the contract. Judge Morton, in deciding the case against the two newspapers, said he could not find when they had made any claims or given any orders based upon amounts that were not used up.

The foreign trade committee of the Chemical Alliance, Inc., has submitted a report recommending the organization of a \$15,000,000 chemical corporation under the Webb-Pomerene law. The capital will be divided into \$10,000,000 of common, and \$5,000,000 of preferred. The former is to be subscribed by manufacturers participating fully in the plan and the preferred stock will be offered to manufacturers who desire to co-operate, but wish to maintain their individual organizations. Participation will be on the basis of average annual sales of each chemical handled by each manufacturer, and profits will be distributed in the same proportion as dividends on the common stock.

The old idea of establishing pulp and paper mills for the manufacture of paper for the Government has again been advanced in the shape of a bill introduced in Congress by Representative Raker, of California. The measure has been referred to the House Committee on Printing, and it is more than likely that it will be allowed to die, a fate that has been met by similar smaller bills in the past.

Messrs. James A. Connors and Joseph D. Latno, of the James W. Sewall office, timber cruisers, Old Town, Maine, have returned from a short exploration trip in western Quebec.



Technical Section



T. S. MAN IN FRANCE.

Second Lieut. Allan A. Lowe, 59th Pioneer Infantry, U.S.A., is now stationed at Mauguennes, France, a town which was occupied by the Germans for nearly four years. Mr. Lowe is a member of the Technical Section, and has been with the Laurentide Company seven years.

Several new men have been added to Laurentide Technical staff. We hope to see them enrolled in the Technical section.

Mr. Alexander B. Blandy, of Greenwich, N.Y., has recently joined the Inspection Staff of the Paper Mill Department. At the time the United States entered the war, Blandy was a student at the Rensselaer Polytechnic Institute at Troy, N.Y. He entered the army and has seen service overseas. Coming from a family of papermakers, Mr. Blandy will doubtless make good in Grand'Mere.

Among the newest arrivals at the Inn is George Anthony Balko, who joined the ranks of the Laurentide Company as assistant to Mr. Bauter. Mr. Balko is a graduate of Stevens Institute of Technology, Hoboken, N.J., and a member of the American Society of Mechanical Engineers. He recently received his discharge in the United States Navy, having been overseas. He served as an Engineer Officer in the United States Navy on the U. S. S. Hickman. Mrs. Balko is expecting to join Mr. Balko in a very short time.

The newest member of the Section is Mr. J. O'Donoghue, Laurentide Company, Grand'Mere.

BUFFALO HOTELS FILLING UP.

It is now impossible to get accommodations either at the Hotel Statler, the Iroquois Hotel or the Lafayette Hotel. Members can still secure rooms at the outlying hotels, if applications are made promptly.

A large attendance is looked for at the meeting which opens on Wednesday, at Erie, Pa., and continues on Thursday with business and scientific sessions at Larkin Auditorium, Buffalo. An extensive program of excursions and mill visitations has been arranged for Friday and Saturday, details of which are given in the official program which was mailed to members last week.

Among the features of the technical sittings will be a paper by Dr. Otto Kress and Sidney D. Wells, of the Forest Products Laboratory, Madison, Wis., on the Manufacture of Cellulose for Book Paper from Cotton Linters; A Description of a New Testing Oven for Woodpulp, by F. M. Williams and A. Description of a Process for Recovering Alcohol from Sulphite-Waste Liquor, by Prof. Ralph H. McKee.

Special interest attaches to the announcement of a paper and discussion on The Use of Colors in Paper from the Manufacturers' Standpoint. The discussion will be opened with a paper by Dr. W. H. Watkins, of the National Aniline & Chemical Company. Welfare Work in Factories will be discussed by Dr. H. R. Hourigan, of Larkin Company, who will illustrate his remarks with appropriate lantern slides.

In connection with the visits to plants and points of interest in Buffalo, the Buffalo Foundry & Machine Co., has prepared and distributed a map of the city, showing the route of the tour and giving a brief note of explanation of things to be seen.

PRESIDENT HATCH, T. A. P. I. LEAVES HOLYOKE.

Raymond S. Hatch, manager of the research department for the Crocker-McElwain and Chemical Paper Companies, has resigned his position to become general manager for the Hamersley Manufacturing Company's mill in Garfield, N. J. Mr. Hatch came to Holyoke as chemist for the Crocker-McElwain Company and was later made superintendent and head of the research department. He is president of the Technical Association of the Pulp and Paper Industry.

MEETING OF THE WOODLANDS SECTION.

On the 25th and 26th of June, the Woodlands Section of the Canadian Pulp and Paper Association will hold a meeting at the Quebec Government Nurseries at Berthierville in response to an invitation from Mr. Piche, the Chief Forester. A special sleeper will be attached to the trains leaving Montreal and Quebec, respectively, at 11.30 p.m., and will be left off at Berthier Junction. Breakfast will be served here, and the plantations and nursery visited. There will be a general discussion on reforestation, its commercial practicability, methods and costs; a report of the committee on logging improvements, slash disposal and other matters of interest. The cars will then be taken to Grand'Mere, where the members and guests will pass the night. The following day the plantations of the Laurentide at Grand'Mere, and the nurseries and plantations at Proulx will be visited, and the cars will then proceed to Three Rivers to be attached to the afternoon trains for Montreal and Quebec. Much interest is being taken in this meeting, and good results are expected from it.

AMERICAN CONTRIBUTIONS TO TEXTBOOK FUND.

During the week of May 24, R. S. Kellogg, secretary of the Committee on Vocational Education of the Pulp and Paper Industry, has deposited with the treasurer of the Technical Association the following sums received on account of the Vocational Education Fund:

Previously acknowledged	\$1,875.00
Strathmore Paper Company	125.00
Hammermill Paper Company	100.00
New Haven Pulp and Board Company	50.00
Pettebone-Cataract Paper Company	26.38

Total \$2,176.38

The flesh side is not liable to crack, as the grain sometimes will do when the belt is old, hence it is better to crimp the grain than to stretch it.

REVIEW OF RECENT LITERATURE.

R.0. German industry and the War. (*L'industrie allemande et la Guerre*). *Chimie & Industrie*, 1, pp. 159-238, (1918). The authors show in detail what means were employed for supplying these needs in each of the principal German industries. It is evident from a close scrutiny of the methods used, that the German chemists have not made any important new discoveries; they have made the very most, industrially, of many reactions which had barely passed the experimental stages when war was declared. To supply the enormously increased demand for alcohol, recourse was had to molasses (which was used to a relatively small extent before the war), beets, sugar. A large number of sulphite plants produced it from their waste liquors, and though certain difficulties were experienced the process was, on the whole, successful. A certain amount was obtained from sawdust by hydrolysing with dilute sulphuric acid at a pressure of about 7 atmospheres; but this process was not very extensively used. Alcohol was also obtained from calcium carbide, but this process was not greatly used both because hydro-electric power is not over plentiful in Germany, and also because that country requires very large quantities of carbide for the manufacture of acetylene. In August, 1914, Germany was cut off from one of its important sources of wood, Russia; but by the invasion of Poland, Lithuania and Courland, she soon more than made up for early losses. The pulp industry was strained to its utmost capacity, for it had to supply the needs of the army for nitro-cellulose and of the civil population for textiles, besides furnishing a cattle-feed and supplying the country with paper. This was accomplished only by considerable importations of Scandinavian pulp. Substances containing a high percentage of cellulose, such as straw, sawdust or woodpulp, have for the most part little or no nutritive value. By suitable treatment with caustic soda, they are rendered much more highly digestible, and have been largely used in Germany as fodder. Attempts have been made to obtain the same results by substituting hydrochloric or organic acids for caustic soda; but so far no satisfactory results have been obtained. The authors discuss the problems facing both the French and the German industries after the war, the steps which should be taken by the former if they hope to compete successfully on the world markets.—A. P.-C.

K.8. Improvements to the production of aniline black on vegetable fibres. (*Perfectionnements apportés à la production de noir d'aniline sur les fibres textiles végétales*). French patent No. 489,601, granted to the Calico Printers' Association and E. A. Fourneau, England, Feb. 25, 1919. *Le Papier*, 22, p. 91, (1919).—This patent covers a process for producing aniline black on vegetable fibres, which is characterized by the use of special mixtures of aniline or its homologues, acid, oxidizer, thickener and catalyst.—A. P.-C.

K.23. Safety Paper. E. E. Schmidt, U. S. A. P. 1,269,863. *Chimie & Industrie*, 2, p. 324, 1919.—Paper coated with a composition containing sodium or potassium ferrocyanide, sodium or potassium iodide, glycerine, ox-gall, tapioca flour, and caustic soda.—A. P.-C.

M.4. Cast iron pulleys versus steel pulleys. (*Poulies en fonte et poulies en acier*). *Le Papier*, 22, p. 51, (1919).—Cast iron resists well against compres-

sion, but not so well against tension; steel resists equally well in both cases, its co-efficient of resistance being higher in both cases. Cast iron is much more brittle than steel. A deformed steel pulley can be repaired, while it is very difficult to repair a broken cast iron pulley. When working at high speeds the cast iron pulley is much more likely to break from the effects of centrifugal force than steel pulleys. Moreover steel pulleys are from 40-60 per cent lighter than cast iron pulleys of same diameter, and consequently absorb less power. Steel pulleys are generally made in two pieces, cast iron pulleys in one; hence the former are much more easily set up or replaced. Owing to the contraction of iron on cooling, cast iron is nearly always subjected to internal stresses, especially at the junction of the arms and rim, and this is increased by the expansion due to the heat of friction. After a cast iron pulley has been in use for some time, the belts slip more than on a steel pulley. When pulleys move at very high speeds the resistance of the air becomes appreciable, and it is smaller in the case of steel pulleys. Cast iron pulleys can be very easily and quickly turned out. Pulleys with very wide rims or very small diameters are much more easily made of cast iron than of steel.—A. P.-C.

N.4. Oil separator for boiler feed water. (*L'eau d'alimentation des chaudières*). *Le Papier*, 22, p. 53, (1919).—Condensed steam from an engine always contains small quantities of oil from the cylinder. This oil had defied all efforts at filtration, for it exists in the form of minute globules less than 0.001 mm. in diameter, and consequently it passed through the closest filters. By subjecting the condensed steam to an electric current at 110 volts, the emulsified oil globules are agglomerated, and can then be filtered out.—A. P.-C.

N.7. Hydro-electric resources of France. (*Les forces hydro-électriques de la France*). *Le Papier*, 22, p. 84, (1919).—The total hydraulic power in France is estimated at 9 million H.P., of which 800,000 were being used in 1914; in 1918 this had increased to 1,500,000; while in the same period the invested capital had increased from 400 to 1,500 million francs. The energy is utilised for the production of electric steel, electrolytic iron, ferro-alloys, aluminium, copper, zinc, rare metals, chromium, tungsten, manganese, silico-manganese, nitrogen products, chlorine, caustic soda, phosphorus, carborundum, etc. The pulp and paper industries absorb about 30,000 H.P., and the textile industries 20,000.—A. P.-C.

N.0. Sources of mechanical energy. (*Electricity, Steam, Gas or Oil*). (*Choix du mode de production de l'énergie mécanique—énergie électrique, machine à vapeur, moteur à gaz, ou moteur Diesel à essence*). *L'usine*, through *Le Papier*, 22, p. 52 (1919).—Owing to the low efficiency of small steam engines, small mills which do not require steam for other purposes than generating mechanical energy, should use electrical energy, even at a relatively high cost per unit. Should electrical energy not be available, gas or fuel oil should be used. Promising results have been obtained in attempts to utilise the heat of flue gases, but so far these are applicable only to large plants. A gas engine is a more delicate piece of machinery than a steam engine, but the maintenance charges are much lower. The Diesel engine requires but little room and can easily be run by any good engineer.—A. P.-C.

PULP AND PAPER NEWS

P. B. Wilson, of Sault Ste. Marie, who is vice-president of the Spanish River Pulp and Paper Mills, Limited, spent the past few days in Toronto. He attended the graduating exercises of the nurses of Toronto General Hospital at which his daughter, Miss Doreen Wilson, received her diploma.

The Ontario Government is advertising in connection with the sale of timber berths in the districts of Algoma, Sudbary and Nipissing, consisting of ten townships in all, the right to cut red and white pine timber, the tenders to be received by Hon. G. Howard Ferguson, Minister of Lands, Forests and Mines up to July 16th next.

There have lately been printed and distributed to members of the trade, the trade customs of the Tissue Section of the Canadian Pulp and Paper Association and also the Canadian Box Board Trade Customs of the Canadian Pulp and Paper Association.

The many friends of R. S. Waldie, president of the Toronto Paper Mfg. Co., Toronto, are congratulating him on his appointment as a director of the Imperial Bank of Canada to fill the vacancy caused by the death of Cawthra Mulock of Toronto. Frank A. Rolph, of Rolph, Clark, Stone, Limited, lithographers and engravers, Toronto, has also been added to the Board of the Imperial Bank taking the place of the late Hon. W. J. Hanna. Mr. Rolph was a member of the War Board at Washington and is also a member of the Toronto Housing Committee.

W. J. Sheppard, of Waubashene, Ont., vice-president of the Toronto Paper Mfg. Co., is a member of the Board of Directors of Eastern Theatres, Limited, Toronto, capitalized at \$1,800,000, who will erect a new moving picture and vaudeville house on Yonge street, Toronto, with a seating capacity of 3,500, which will be the largest theatre in the city.

George R. Gray, woods superintendent of the Spanish River Pulp and Paper Mills, spent a few days in Toronto last week on business. He reports that, owing to the high water caused by the recent heavy rains, the company's supply of pulpwood has been coming down the streams in splendid shape and driving conditions were never better.

L. E. Sayre, Jr., vice-president of the Canfield Paper Co., New York and Philadelphia, was in Montreal last week, calling upon the trade.

Alfred Phillips, now of the Phillips Paper Co., Winnipeg, formerly of firm of Barkwell-Phillips Co., of that city, was in Toronto recently calling upon the trade. The name of the latter house is now the Barkwell Paper Co.

George Crosier, of the firm of Henry & Leigh Slater, Limited, paper makers, Manchester, Eng., was in Toronto last week on business and called upon many Canadian customers.

John Martin, of Winnipeg, after spending several days in Toronto, left recently for the west and will spend some time camping on the shores of Lake Winnipeg until his health is completely restored.

Lieut.-Col. W. W. Burland, of Montreal, who is widely known in Canadian paper circles from his long association with the trade, has been appointed commandant of the Canadian Bisley team in England. One hundred and fifty selected marksmen from Canadian areas are now attending the Bisley eliminating trials.

There was unveiled in the Neeropolis cemetery, Toronto, last week, a monument erected to the memory of William B. Prescott, President of the International Typographical Union of North America from 1891 to 1898. The splendid monument was purchased by subscription of the international members. The late Mr. Prescott was born near Toronto and was apprenticed to the printing trade in the old Canada Presbyterian office, Toronto, and later worked on the city dailies. To him is largely due the credit of the system of education of apprentices in the printing trade, he being one of the early pioneers in technical education for the craft. Another of his great achievements was in carrying over the printing trades through the crisis that occurred when the typesetting machines began to be introduced in the offices. Mr. Prescott died in Chicago in 1916 where he was manager of the Sheppard Publishing Co., and Chairman of the Instructional Course of the International Union. He initiated the Toronto Union in 1883.

The Hydro Electric Power Commission has taken over the electric plant and transformer station from James Battle, of Thorold, Ont., and the price paid was \$100,000 in four per cent bonds. It is understood that the town will take over the plant. This will be good news to the industries in Thorold, a number of which have been complaining of late of shortage in power. Mr. Battle had a twenty-six year contract with the Ontario Power Co., and supplied a number of industries and private consumers. He has always been a great booster for Thorold and was instrumental as industrial commissioner for a number of years in inducing a number of pulp and paper plants to locate in that busy town.

Lieut.-Col. C. H. L. Jones, manager of operation for the Spanish River Pulp and Paper Mills, Sault Ste. Marie, Ont., was in Toronto recently on business.

The job and book printers of Toronto have entered into a new arrangement with their employees for an increase in wages of \$8 a week, making the regular wage \$32. The number of working hours remain the same as formerly—forty-eight a week. The job printers will, however, get a forty-four hour week in May, 1921, through an agreement made by the Master Printers of America with the International Typographical Union.

Lloyd Harris, Chairman of the Canadian Mission in London, Eng., addressed a large gathering of business men this week in the Assembly Room of the Toronto Board of Trade. He spoke on "Canada's Trade Development" and particularly pointed out the excellent openings and wide demand for Canadian hun-

ber, pulp and paper products in which he felt a great overseas trade would be developed in the near future.

Brigadier-General J. B. White, of Montreal, who is head of the woods and saw mill department of the Rirdon Pulp and Paper Co., and had charge of the operations of the Canadian Forestry Corps in France, spent a few days in Toronto recently on business and reports that business in the pulp and paper line is excellent.

Mr. Chabot, of the Hammermill Paper Co., Erie, Pa., was in Toronto lately calling upon the trade.

Owing to the general industrial situation, which made it impossible for a large number of the officers and members to attend, the sixty-first annual meeting of the Canadian Press Association, which was to have been held in Toronto this week, has been postponed indefinitely. It is probable the gathering will take place in Toronto during September.

Capt. J. E. Smith, formerly on the staff of the Sherbrooke Record, is back from France. He went over with the 117th Battalion early in 1916, and was later with the R. A. F., and then with the Army of Occupation.

One machine of the St. Maurice Paper Co., at Cap. Madeleine, P.Q., has been shut down recently, due to the breaking of a shaft.

At the annual meeting of Price Bros. & Co., J. Leonard Apedaile was appointed managing director. From the "Ticker" it is learned that No. 5 digester has practically all been delivered at the mill and erection is going forward rapidly. R. P. Greig has begun his duties as night superintendent of the paper mills.

The woodroom of Price Bros. & Co., started operating in full for the season on April 29th. Although the weather was cold and wet, quite satisfactory progress has been made during the opening days. When full production is reached, which should be very shortly, it is expected that 1,200 cords will be prepared daily from the employment of about 45 men.

H. E. Ball, manager of the Montreal Branch of the E. B. Eddy Co. is spending his holidays at Philadelphia and Atlantic City. He is expected back in harness this week.

The Fraser Companies' Sulphite pulp mill at Edmunston, N.B., is down for a short time in order to change over the bleach system and to provide additional sewage facilities. The power development is nearly finished, giving about 3,000 H.P.

Almy, Van Gordon and Evans are conducting complaints of interest to paper makers against the Director of Railroads, Walter D. Hines, before the Interstate Commerce Commission. One is in behalf of the Waste Merchants' Association of New York, who have had to load freight in New York that should have been inspected, checked, and placed in cars by the carrier, asking that the several railroads involved be commanded to perform such service and to pay the complainants a reasonable reparation for handling and lighterage. The other case is the complaint of John Richardson & Co., of Boston, and others for excess freight rates charged in China clay, etc., because of unreasonable allowances for lighterage. In each case it is claimed that defendant has violated the Federal Control Act. Complainants expect to win in each case, both of which were ably handled by counsel for each contestant.

It is stated that all deferred dividends will be paid off by the Abitibi Power and Paper Co. before the end of the year.

GOING ON AT GRAND MERE.

Le Digesteur says: Mr. Crooker has returned from England and it is our opinion from what we have seen that he just simply walked in and selected any of the real board orders that John Bull happened to have on his books. That heavy rumbling noise that you hear occasionally is the cardboard machine making up these orders at the rate of fifty to sixty tons daily.

With the installation of the new moisture testing system on the news machines, the moisture content in paper has been increased 1 per cent. This, in addition to effecting an appreciable saving in stock, improves the running qualities and surface of the paper. Please do not confuse this with the proverbial system of "watering the stock" as it has no relation whatever to this universal pastime.

Mr. H. Morrow has gone to Grand Falls, Newfoundland, where he has accepted a position.

New Pulp Washing System.

Digester Number 4 has been temporarily shut down to allow the placing of a new tile bottom in the blow-pit. This will make three blowpits with tile bottoms, and it is planned to eventually have tile in all six, instead of the wooden bottom, as it present. The tile have the advantage of losing less stock while draining because of the smaller size of the perforations. It is found that the upkeep cost of tile and wood bottoms is practically the same.

We believe that the high pressure system of washing the stock in the blowpits deserves mention. Formerly the washing was done by four men working from the top with streams of water, and 13½ hours were required to wash each pit. With the new method the time is reduced to 1 hour, and can be done in less if necessary. Only two men are needed to do the work of the former four. As this was shift work it is a saving of six men for the 24 hours.

The mechanism of the system is as follows: A short distance above the false bottom of the pits are placed 13 nozzles spaced equally around the outside and directed toward the centre of the pit. The nozzles on the side of the pit farther away from the outlets are made larger, which drives the stock out. These nozzles are supplied with water from a special pump which gives about 58 lbs. pressure per square inch. The outlets from the pits were made large and now when the stock in the pit is well washed the water is turned on and the stock is moving on its way to the screen room and finally the paper mill in short order.

The money saving of this system is no mean item either. The cost of installation was \$6,500. The saving effected amounts to \$4,000 a year, or 61 p.c. on the investment. It is considered to be the best innovation made in the department for some time.

Clarence Hill-Smith, of Boston, Mass., has been appointed managing director of the Mattagami Pulp and Paper Co.

It is possible to effect quite a saving by using gaskets cut from sulphite laps instead of rubber on the digester cover unions.

Large scale trials made at the Titaghur Paper Mills Bengal, having shown that bamboo pulp is suitable for making high quality paper, the government of Burmah has granted concessions for the cutting of bamboos for this purpose.



CANADIAN TRADE CONDITIONS.

Toronto, June 2.—Business in the pulp and paper line continues good and in spite of the industrial unrest and general strike situations which prevail in a large number of trades, the paper mill and pulp plants are moving along steadily. General agitation has been in progress for an eight hour day. The workers in the paper industry have enjoyed this boon in some plants for several years owing to the inauguration of the three tour system. Nearly all mills have recently put the plan in operation. Some book mills are rushed to the limit with orders. They report that jobbers, who were hanging back, have started in to place large contracts realizing there will be no drop in price and are getting eager regarding deliveries. There appears to be an undercurrent of opinion in the trade that book and writing papers will advance. Owing to everything else going up in price it is not expected, in view of the general situation, that quotations for paper can stand still. One cause that is destined to contribute to higher values in paper is that not as much peeled pulpwood is being taken out by settlers as last year. This is accounted for by three reasons, one being that the companies are not anxious to make any fixed prices owing to uncertainty of conditions; another is that settlers in the absence of a fixed price for their product are hanging back and the third and last reason is that the rains have filled up the swamps and low lying ground and made cutting in many cases difficult if not impossible. One leading pulpwood operator in northwestern Ontario, who has taken out a great deal of pulpwood in the past, states that he did not cut any last season and he thinks the cost of taking out the wood has reached the highest point ever attained. The price paid by one Ontario firm for peeled pulpwood, on board cars, run from \$10 to \$13 a cord depending on freight rates to point of destination. More and more buyers are anxious to purchase peeled wood due to the saving in freight as the latter is a big item at the present time and may go still higher.

On the newsprint question, Controller Pringle sticks by his figure of \$69 per ton having consideration for the heavy costs of production and the making of reasonable profits by the firms. The final argument in

the appeal entered by the publishers before the tribunal of judges will be heard in Ottawa this week, but it is felt there will be no reduction in price. One of the larger Toronto dailies has increased its advertising rates materially in order to take care of advancing costs for materials, wages, etc. There was a reduction in tissue and toilet papers some time ago owing to various contributing factors, but during the past week there went into effect an increase. The discount on toilet papers, in car load lots, has been restored to 25, 20 and 19, whereas it was 30, 20 and 10. There has been an advance of ten to twelve per cent on tissues and the mills are far behind in their orders.

The pulp market is gradually improving and manufacturers are looking forward to export trade reports from across the border indicate increased requisitions and from now on there should be a perceptible improvement in conditions. The worst has passed and future buying will soon take care of all surplus stocks on hand. That there is firm faith in the future of the Canadian pulp and paper industries is evidenced by the strength of the stock on the Montreal and Toronto exchanges and the underwriting of various securities. One leading firm which has underwritten the bonds of leading companies, is advertising in large newspaper space its reasons for backing pulp and paper enterprises and points out that during the last fiscal year the exports in pulp and paper were nearly double of what they were two years ago. It adds that such investments are safe, profitable and patriotic and today of all Canada's manufacturing export industries, pulp and paper is the largest.

As a result of an important conference held with Lloyd Harris, of the Canadian Trade Commission in Ottawa by pulp and paper manufacturers, it is the intention of the Canadian Pulp and Paper Association to hold a special general meeting this week to consider the appointment of an overseas representative who will be in a position to take full advantage of all offers of tonnage and keep Canadian firms posted on just what is going on. In this respect the paper industry will be following the example set by white pine lumber manufacturers of Ontario who have had a duly qualified commissioner in London for several weeks doing

Scandinavian American Trading Co.

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Bleached and Unbleached of
Canadian manufacture.
Write and let us show you
what we can do.

propaganda work. He reports that his reception has been most cordial and he finds everywhere a great interest in all things Canadian. His preliminary report, made a few days ago, is full of encouragement and bears out just what the pulp and paper men are up against—the need of increased ocean transportation facilities and lower freight rates. However, he does not despair on this point and fully expects that during the present month and succeeding ones, conditions will appreciably improve as nearly all the soldiers from overseas are now home, and large cargo spaces are likely to be released.

So far as can be learned there is not going to be a great deal of building in the pulp and paper industry this year by reason of the uncertain labor element and the hope that steel and other structural material may come down in price. It is felt that equipment may also take a drop. At least, several firms which have been considering extensions are of the opinion that waiting another year will do no harm at any rate.

Good progress is being made in the erection of the buildings of the Kipawa plant of the Riordon Pulp and Paper Co., and over a thousand men are on the pay roll. Plans have been prepared for several workmen's houses by the St. Maurice Paper Co. at Cap de Madeleine, Que. The dwellings will be of frame construction, the foundations being of concrete. All the houses have basements, bath rooms, electric light and are heated by a hot water system. There are four standard units being used, four rooms, five rooms and six rooms. A school house will also be erected. The object in view is to provide comfortable quarters for the workers, built at a cost which will enable them to be rented at a figure within the means of the employees and at the same time give the company some return on their investment.

Several meetings in the interest of safety work, which were to have been held during the present week among employees of pulp and paper mills have been postponed for some time, owing to the prevailing hot weather and other causes. However, preparations are going ahead to resume these educative and interesting gatherings in the near future.

There has gone into effect an advance of ten per cent, on coated boards and blanks, and it is probable there will be another increase in the near future.

Current quotations are:—

Paper.	
*News (rolls) at mill, in earload lots	..\$3.45
*News (rolls) in less than earload lots	..\$3.52½
*News (sheets) at mill, in earload lots	..\$3.50
*News (sheets) in less than earload lots	..\$3.92½
xBook papers (earload), No. 1	..\$9.75
xBook papers (ton lots), No. 1	..\$10.00
xBook papers (earload), No. 2	..\$9.50
xBook papers (ton lots), No. 2	..\$9.75
xBook papers (earload), No. 3	..\$8.25
xBook papers (ton lots), No. 3	..\$8.75
Ledgers	..18c up
Sulphite bonds	..13½c
Light tinted bonds	..14½c
Dark tinted bonds	..16c
White Wrappings	..\$5.25
Writings No. 2 (M.F.)	..12½c up
Coated book and litho, No. 1	..\$12.25
Coated book and litho, No. 2	..\$11.25
Coated book and litho, No. 3	..\$10.50
Coated book and litho, colored	..\$12.50 to \$14.00
Grey Browns	..\$5.25

Manila, No. 1	..\$7.35
Writing No. 1 S. C.	..13c up
Fibre	..\$7.35
Manila B	..\$5.60
Tag Manila	..\$6.00
Un glazed kraft	..\$9.00
Glazed kraft	..\$9.00
Tissues, bleached	..\$1.35 to \$1.90
Tissues (unbleached sulphite)	..\$1.25 to \$1.75
Tissues, cap, per ream	..\$1.00 to \$1.40
Tissues, manila, per ream	..90c to \$1.20
Natural greaseproof	..15c
Bleached greaseproof	..19c
Genuine vegetable parchment	..22c.
Bleached white glassine	..22c
Drug papers, whites and tints	..8c.
Paper bags, manila (discount)	..35 per cent
Paper bags, kraft	..27½ and 10 per cent.
Confectionery bags	..34 per cent
Gusset bags (manila)	..35 and 15 per cent
Straw board	..\$63.00
Chip board	..\$63.00
Vat lined chip board	..\$67.50
Filled wood board	..\$83.00
News board	..\$80.00
Double manila lined board	..\$90.00
Manila lined folding board, chip back	..\$87.50
Pulp folding board	..\$95.00
Jute board, No. 3	..\$63.00
Tag board	..\$120.00
White patent coated board	..\$115.00 to \$130.00
Grey folding board	..\$115.00
Pasted board	..\$95.00

*For Canada only.

x These prices are for machine finish, super-calender one-half cent higher.

Pulp Prices.

	F.O.B. Mill.
Groundwood pulp	..\$26.00 to \$29.00
Sulphite, news grade	..\$65.00 to \$70.00
Sulphite, easy bleaching	..\$85.00 to \$90.00
Sulphite bleached	..\$100.00 to \$105.00
Sulphate	..\$80.00

NEW YORK MARKETS.

New York, May 31.—While no important changes have developed, the market for paper has ruled firm this week and from all quarters have come reports of increasing activity. Consumers in all sections of the country have been freely in the market for fresh supplies and have absorbed comparatively large quantities of paper at firm prices. Indications are that mills are running at greater capacity than at any time since last fall, and, judging from the reports received, most of them are booking orders which will soon necessitate increasing their output to an even larger extent.

While the export market is still far from brisk, members of the trade say that substantially more business is being secured, and it can be accurately said that there is a larger movement of various kinds of paper abroad at present than possibly ever before in the history of the industry in this country. Foreign buyers apparently have come to realize that further drops in prices are unlikely, and are purchasing in heavier volume though still pursuing a cautious policy, generally confining their orders to amounts actually needed.

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Newsprint is moving in a consistent way and in large volume. The resumption of operations at the mills of the leading producer this week had little or no effect on the demand; if anything, buyers have been more anxious for fresh supplies. This probably has been due to the fact that while production was curtailed, stocks of many consumers were reduced to a very low point, so that buyers have come actively in the market this week for paper with which to replenish their depleted holdings. Prices are strong, and manufacturers are hesitant about accepting orders for large tonnages for future delivery. One leading producer is known to have refused to quote a month ahead on 600 tons wanted for export, owing to labor conditions and the uncertainty surrounding the future.

Book papers are actively sought and prices are strongly maintained. The majority of mills are running full, and authoritative factors in the trade assert that about all that is required to advance prices is a slightly larger demand. There is at present a sufficient demand to absorb virtually the entire output, and should buyers increase the volume of their orders, there seems little question that the competition for supplies would soon run prices up. Tissues are steady and in fair demand. No. 1 white tissue is quoted at 90 cents to \$1.00, while No. 2 white and manila tissue are selling at between 80 and 90 cents. Wrapping papers are sought in better volume and at firm prices. Fine papers are moving in steadily increasing quantity and prices tend sharply upward. The cost of production of bond and ledger papers is mounting, raw material being costlier than heretofore, and manufacturers say they are compelled to get higher prices for their product in order to operate at a profit.

The board market is quiet and prices are rather easy. Demand has improved to a slight extent this week, but box makers and other consumers are still buying in hand to mouth fashion, and most mills are badly in need of business. Quotations are nominally maintained at a basis of around \$40 per ton for chip board, but indications are purchases can be effected in some directions at lower prices.

Groundwood.—The market for mechanically groundwood is holding its own, although the situation on the whole is marked by quietness. Sales are being accomplished, of course, but consumers are absorbing only limited tonnages of pulp, and aggregate offerings are in excess of the demand. This is the time of the year when grinders usually have large surplus supplies on hand, and under the circumstances, it is not surprising that prices tend to show weakness. Around \$25 to \$26

per ton at the producing mill is the price generally named on No. 1 groundwood in the east.

Chemical Pulp.—A fairly good business has been done this week in chemical pulps. Consumers have been in the market for moderate amounts of domestic fibre, and occasional sales of limited quantities of spot foreign pulp have been reported. Prices on the latter seem inclined to advance. During the past few months importers have been gradually liquidating their dock and warehouse stocks until now there is a very small supply to be had on this side, and with replacement costs considerably beyond the prices ruling on spot pulp, sellers are becoming more insistent in their demands for higher prices. Domestic unbleached sulphite of newsprint quality is selling at \$65 to \$70 per ton at the pulp mill, while domestic easy bleaching sulphite is quoted at 1.25 to 4.50 cents a pound and bleached sulphite at around 5.50 cents. Soda pulp is freely sought and is firmly priced at \$85 to \$90 a ton, with very few manufacturers offering. Kraft, on the other hand, is weak and in little call.

Rags. The rag market displays a decidedly more active complexion. Consumers are in evidence as buyers in larger numbers than for a long time, and supplies are being absorbed with freedom and at higher prices. Substantial advances have been recorded on several classes of stock, and sellers are now pursuing a cautious policy in accepting further orders, claiming that the scarcity is becoming more acute and that it costs them more to replace the stock moved. No. 1 repacked white rags are said to have sold in the local market this week at as high as 8 cents a pound. If transactions were actually made at this price, there is no question that the rags involved were of choice grade, for other dealers are offering good quality packing of white rags at around 6.50 cents delivered mills. Repacked thirds and blues are bringing 4 cents a pound in sales to mills, while roofing stock is moving briskly at a price basis of about 2 cents f.o.b. New York. Felt manufacturers are among the most active buyers of rags at present, and few lots of satinets placed in the market within reasonable price bounds remain long unabsorbed.

Paper Stock.—A slightly better demand has prevailed for waste paper this week, and the market has been characterized by a livelier tone. Consumers, however, have continued to restrict their purchases to an apparent degree, and demand at best has failed to assume large enough proportions to take care of all the supply available. This applies particularly to the low grades, which continue rather weak in price. No. 1

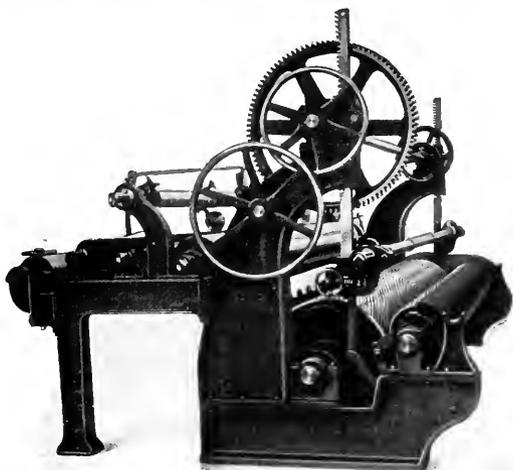
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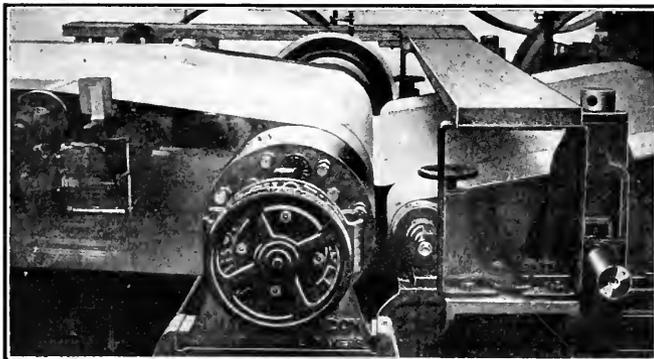
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mixed paper commands no more than 10 cents per hundred pounds f.o.b. New York, while numerous sales have been made at lower figures. Folded news is selling at an average price of 50 cents New York; over-issue news is worth in the neighborhood of 85c. New York, and white blank news about \$1.00. The most generally sought grade for the moment is flat stock. Book mills are freely inquiring for supplies and shippers are disposing of all the books and magazine coming their way at prices ranging around 1.50 cents New York for heavy flat stock, and from 1.20 to 1.25 cents for mixed books. Shavings are in quiet demand and quotations run from 4 cents a pound upward on No. 1 hard whites, depending on the packing and the amount concerned, and from 2.75 to 3.00 cents on soft white shavings of No. 1 quality.

Bagging and Rope. The market for old Manila rope is in a stationary position, with sales reported at 4.50 cents per pound New York for No. 1 domestic rope. Strings are sought at a price basis of about 2 cents f.o.b. shipping point. No. 1 scrap bagging is moving in limited quantity at 2 cents New York.

NEWSPRINT PRICES PAID BY PUBLISHERS.

The weighted average contract price paid by American publishers during April, 1919, f.o.b. mill in earload lots for standard news in rolls was \$3.375 per 100 pounds. This weighted average is based upon more than 500 contracts involving more than one million tons. These contracts, most of which extend until December 31, 1919, include a few long-term contracts made prior to the war at very low prices. The majority of the contracts which cover the bulk of the tonnage are prices between \$3.50 and the price of \$3.7525 per 100 pounds fixed by the Federal Trade Commission.

Current purchases of standard roll news in earload lots f.o.b. mill ranged from \$3.50 to \$3.95 per 100 pounds. The weighted average market price based upon purchases totaling more than 4,000 tons was \$3.716 per 100 pounds.

The imports of newsprint for March, 1919, which were all from Canada were 5044 tons less than for March, 1918. The Exports for March, 1919, were 721 tons greater than for March, 1918.

The imports of mechanically groundwood pulp for March, 1919, were 96 tons greater than for March, 1918. The Exports of Domestic woodpulp were 1315 tons greater than for March, 1918.

The imports of chemical woodpulp for March, 1919, were 1100 tons less than the imports for March, 1918. The bulk of this tonnage was unbleached sulphite and sulphate from Canada.

PULP HISTORY IN SWEDEN.

Sweden's first wood pulp grinding mill was erected in Ohnan, Trollhattan, in 1857, says Consul George D. Hopper. It was followed in 1866 by another wood pulp mill, after which a number of new mills in succession grew up in different parts of south and central Sweden, but as far as regards Noorland only in exceptional cases.

In 1870 the number was not less than ten. Twenty years later the number had grown to about seventy.

As early as 1870 the cellulose manufacture gained a footing in Sweden, due mainly to the energetic and conscientious labor of Count Sten Lewenhaupt, who was the initiative spirit in and director of the erection of the majority of cellulose mills in the new industry.

AUSTRALIAN INSPECTING TIMBER UTILIZATION.

Mr. L. H. Boas, chief of the Forestry Products Laboratory of the Commonwealth of Australia, was in Vancouver on May 12. He is making a tour of the world investigating the forestry problems of the different countries, and is now on his way East to Madison, Wisconsin. From there he will go to Washington, New York and Montreal, spending some time at Mettill before sailing for England.

Mr. Boas stated that some time ago experiments were made in an endeavor to produce a good paper pulp from hardwood growths, but with no success. Since then Australian scientists have been experimenting with second growth saplings, and although nothing definite has yet been obtained, there are good hopes of satisfactory results.

The Forest Products Laboratory of the Commonwealth Government is in connection with the Council of Science and Industry, created by the Federal Government for the purpose of carrying out research in any developments associated with Australian industries. The laboratory will be established at Perth, in Western Australia.

Mr. Boas will particularly investigate those centres where forest research has been carried on, and will make special enquiry at Madison, Wis., and Montreal, concerning the elimination of fungi, the utilization of wood waste and the diseases of hardwood, the Australian forests being mostly comprised of this class of wood. It is the object of the Government to preserve and utilize them to the fullest extent.

In British Columbia, Mr. Boas stated, the water transportation is so plentiful that logs may be brought to the mills and the waste used for fuel. In Australia this is not so and the mills very frequently have to be brought to the logs, consequently shipping the waste for fuel is not so commercially possible as in B. C.

Another problem that will be looked into by Mr. Boas is the seasoning of hardwood. This has never been done successfully, and is one of the reasons for his visiting Madison where, it is recently reported, they have made progress in a kiln-drying process.

Jarrah, an extremely hard wood and one of the most important timbers of Australia, is used in the manufacturing of expensive furniture, in railroad ties and other outdoor construction. It is impervious to weather, insects and dry rot, but no means of drying it has been found excepting to leave it to time. Piles that have been in use for ninety years have been found to be properly cured, but this is too long to insure any possibility of commercial exchange. If the process of curing this wood can be found a great timber industry will be created in Australia.

Mr. Boas came to Vancouver from California. From England he will go to France, then to India, and then home. The whole trip will probably take at least nine months.

AN EXPENSIVE SUBSTITUTE FOR COAL.

Because of lack of export opportunities and other markets for the abundant corn crop, the Central Argentine Railway has been using corn for fuel in their stationery power plants, among others in the one at Canale San Fernando, which is producing power for the local trains.—Farmand, Dec. 21, 1918.

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Patented in United States and Canada, and Manufactured by The Waterous Engine Works Co., Ltd.

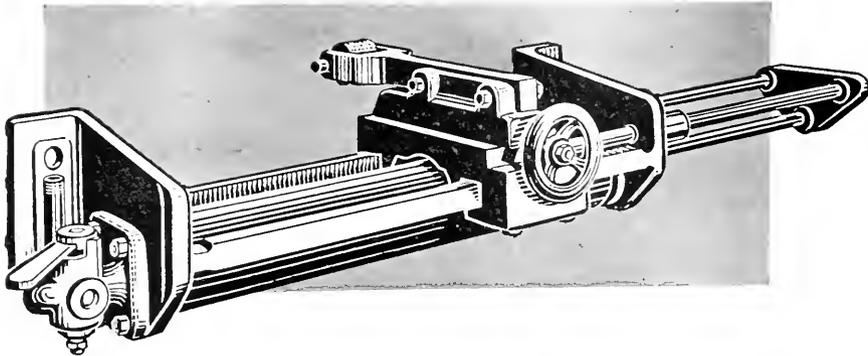
Until recently the stone trueing device has been given very little attention, any attachment that would sharpen the stone being considered good enough.

Experiment and observation, however, proved so conclusively that the condition of the stone not only affects the condition and quality of the pulp produced, but is also a large factor in the amount of power consumed, that efforts have been made to develop a trueing device that would keep the stone ground sharp and true and in the best condition for work.

It was recognized, that the stone, to produce the greatest quantity of good pulp per hour, must have a uniform cutting power, possible only when the speed of the stone is maintained and its surface is true and uniform.

The hydraulic trueing device has been designed to overcome the defects of the existing hand trueing devices.

The main defect of the hand trueing devices was



the inability of the operator, no matter how conscientious, to maintain the burr at an even speed across the face of the stone.

The trueing device illustrated has been developed by men of experience in pulp mill work, and is now well past the experimental stage, being in successful operation in a number of mills in the United States and Canada. It is a sturdy, well built machine throughout, having the weight distributed so as to best resist the pressure exerted on it by the stone.

It is made for 27" and 35" stones and can be readily attached to any make of grinder.

The movement of the tool across the face of the stone is obtained by an hydraulic cylinder cast within the frame. The piston rod is of bronze, extending through the end of the frame, and attached by a heavy yoke to two polished steel rods, which, in turn, are attached to the sliding block carrying the tool, making the movement of the sliding block correspond absolutely with the movement of the cylinder.

A simple four-way valve controls the movement of the piston, permitting the motion to be started, stopped or reversed at will. This assures absolutely uniform grinding, and the wide range of speeds obtained per-

mits of the stone being ground to any desired surface.

The most important advantage of this trueing device is that it moves the burr across the face of the stone without labor on the part of the operator, and at a speed that is absolutely uniform.

This device is very heavy, being thoroughly braced and having the metal distributed to best advantage.

BARKING DRUM HEAD A NORWEGIAN.

Mr. H. W. Guettler, President of Fibre Making Processes, Inc., which controls the American Barking Drum Co., visited Toronto recently in connection with the incorporation of the Canadian Barking Drum Co., handling American barking drums. He is a Norwegian by birth and came to this country five years ago, and has made a remarkable success in developing the American barking drum. One hundred and fifty of these drums are at present in operation on this continent.

Mr. Guettler stated that he has demonstrated that clean pulp can be made by using American barking drums if properly operated, and thereby the last objection against the use of barking drums is removed. The Canadian Barking Drum Company are looking

forward to a good business and are at present engaged in installing two 10' x 30' drums for the Mattagami Pulp & Paper Co., one 10' x 30' drum for the Ontario Paper Co., and two 8' x 20' drums are being installed by the Lake Superior Pulp and Paper Co., at Sault Ste. Marie, Ont., making a total of fifteen drums being operated by this company. A number of installations are now under way in American plants.

NEWSPRINT PROSPECTS BRIGHT.

"Paper men think that there is little chance of the newsprint industry returning to the old price-cutting methods, and keen competitive markets witnessed before the war. Newsprint is scarce throughout the world. There is a shortage of 1,000 tons daily in the United States. Little competition is expected from Germany and Scandinavian countries. The American product has secured a good foothold on the South American markets, where normally the foreign product held firm sway. With these conditions prevailing, it is believed that International Paper Company will have a big market for all the paper it can turn out for some years to come."—Exchange.

Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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Official Journal of the Technical Section of the Canadian Pulp and Paper Association.

J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for. Subscription to any address in Canada, United States and British Empire, \$5.00 yearly. Other Countries Postage Extra. Single copies, 15 cents.

VOL. XVII

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No. 24

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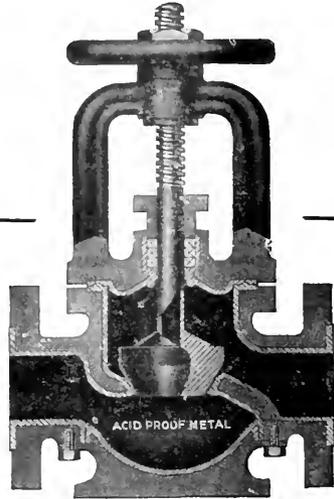
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EDITORIAL

"'NUFF SED."

A. L. Dawe, who for more than two years has served most acceptably as secretary of the Canadian Pulp and Paper Association, is going to London as representative of the pulp and paper industry of Canada in connection with the work of the Lloyd Harris Commission. The advisability of having such a representative was strongly urged by Mr. Harris and immediate action was taken by the Association. It is a big proposition and one that will require skill and tact as well as a wide acquaintance with production and capacities of the various mills. Some knowledge of market conditions, trade customs and transportation problems is also essential. Mr. Dawe has these qualifications, and in addition he is an Englishman, so will be right at home. In the words of a popular advertisement, "'Nuff Sed."

DESTROYERS OF THE FOREST.

The Canadian Forestry Association has a man's size, life long job on its hands in its work of protecting the future of Canadian industries that are dependent upon the forest and which are seriously threatened with extinction by carelessness with regard to fires. They have recently put out a booklet in which the story of a camp fire is given as a dialogue between the spirit of the flames and a boy who went out in the woods for an adventure. This certainly should bring home to the careless camper not only the danger of leaving a fire that is not completely extinguished or allowing a camp fire to get too large, but it also contains some of the most pointed directions for extinguishing a fire that we have seen. The whole thing is presented in an interesting way that makes very good reading and can be made the basis of a very lively evening's meeting for a troop of Boy Scouts or Camp Fire Girls or even for a reading lesson in a school class room.

The hot weather of the past week has brought shudders of anticipation to nearly everyone in Canada who gives a thought to the serious and dangerous condition in which most of the Dominion is found as regards protection from forest fires. The long wet spring seemed to give promise of safe woods conditions for a considerable time and the high water has no doubt kept marshes in a very wet condition, but the rapidly falling water level and the very hot days will very soon change the whole state of affairs from a condition of safety to one of extreme liability to a serious fire. In fact, a fire in Quebec has already destroyed 12,000,000 feet of timber.

With the destruction of forests in Europe both by shell fire and excessive cutting there has come in a call for Canadian timber that will make heavy inroads on our supplies and the destruction that has already taken place in Canada indicates that much greater care must be taken for the future if we are to have any assurance of the continued operation of industries depending upon this kind of raw material.

Efficient forest protective organizations are necessary, but the most important of all considerations is to have an intelligent public whose conscience will not permit them to throw lighted matches or hot pipe ashes or cigarette butts promiscuously about the woods, nor to leave camp fires with a single live coal, nor permit settlers to burn brush except under perfectly safe conditions. Railroads are pretty well regulated and the fires from locomotives are becoming quite infrequent while section hands are also taking more care in regard to the danger from fire. It is the general public and the individual conscience that must be appealed to in order to prevent fires from starting. It is only by keeping fires from getting a start that we can hope to make our forests completely safe from this danger.

Other Destroyers.

While a spectacular element of the forest fire easily arouses the attention and impresses the public with the seriousness of this menace we are told that the more unobtrusive and less noticeable dangers of fungus and insect are really responsible for a greater destruction of forest timber than is the forest fire. The importance of this matter and the extent of the injury was ably presented in an article by J. M. Swaine, published in this magazine last week. Mr. Swaine not only shows the enormous damage done by insects and fungi but has also indicated means of preventing or at least minimizing the amount of destruction. The burning of slash which Mr. Swaine advocates has been discussed in forestry meetings for several years and there is a wide difference of opinion as to the cost and value of this work. It is here shown, however, to be absolutely necessary if we are to protect certain areas from complete destruction of present growth and the almost certain prevention of future reproduction. As stated in the article referred to it is not a question of cost but a question of necessity if we are to have any future growth of timber in these infected areas. The matter of slash disposal will be thoroughly discussed at the

coming meeting of the Woodlands Section the 25th of this month, and it is sincerely to be hoped that some working agreement can be reached whereby this important work will be immediately undertaken, and prosecuted with the intelligence and vigor that the situation demands.

SAVE THE KIDDIES.

It is sickening to think of the number of children who lose lives, limbs or health each year because of accidents or other effects of carelessness. Some people think children are naturally careless and that is all there is to it. It is true that children find it difficult to concentrate their minds on a single topic, but they can be taught to think. If they are not taught to think they usually must learn and the lesson is then a more difficult one.

The Ontario Safety League has issued a leaflet to fathers and mothers asking them to teach children to be careful, to form the safety habit. This simply means teaching them to think and to stop taking chances.

Don't wait till your boy or girl is run over. Point out the danger of trolley, motor, train or wagon.

Don't wait till a match sets the child's dress afire. Explain why fire is not to be played with.

Don't wait till your boy cuts his finger with a knife or his foot with an axe. Teach him to leave them alone till big enough to use them, then show him how to handle tools safely.

It should give everyone of us real pleasure to cheat the hospital and poor house of victims of carelessness by giving more attention to the habits of children.

PAPER MILL DENTISTRY.

Interest in grinders is not confined to mechanical pulp mills. Among American firms that appreciate the relation between the condition of a man's "grinders" and his working efficiency is the Eastern Mfg. Co. In about four months the company dentist made 465 examinations and 264 extractions were necessary. There were 18 acute abscesses, 282 fillings, and 255 prophylactic treatments. Fifteen X-rays were made. One patient gained 5 pounds in a month, due to dental treatment that put him in good condition all round. Another man who had been totally incapacitated for three weeks was completely restored to health by the proper treatment of an abscess. This is an important phase of Safety First work that intelligent management is attending to. Workmen are a bigger asset than machinery, but their depreciation and upkeep have not been included in mill policy till recently.

In their commendable plan to give to boys who enlisted in the army such technical or vocational training as will largely overcome their handicap in industrial work, we would remind the Soldiers' Re-establishment Commission of the danger of over-crowding the trades if it is easiest to provide training for.

WHOSE FAULT IS IT?

A soldier was on the train, going from Montreal to his home in Ontario. He was drunk and made a nuisance of himself, behaving with impudence -- even vulgar discourtesy -- toward an officer. At the first stop he was taken from the train, put in irons and conducted to the "cooler." It is possible that relatives or friends were expecting him on that train and gathered to meet him about midnight. We are not advised as to that. Neither do we know whether he was a regular drinker.

What does stick in our crop is the fact that this man, who had seen service overseas got no better treatment on his return than would put him in disgrace and in the hands of the police. Whose fault is it? This is not an isolated case. Keep your eyes open and you will see those who think they are doing the soldier a favor by slipping him a bottle of booze. Sometimes this is gratis, but more often it is at an exorbitant price for a deadly draught. The person who sells intoxicating liquor -- especially to a soldier -- is a law-breaker and a rascal. The person who gives it is a fool. Some say the trouble is because the whiskey now-a-days is bad. There is no such thing as good whiskey, any more than there is a good Devil.

We feel strongly on this subject and think it is high time that persons in positions of influence as well as the common people realized the demoralizing effects of liquor and cut it out.

WE ARE GLAD TO HEAR IT.

In the editorial columns of Paper for May 21st, exception is taken to a statement recently made on this page that "Hardly any serious attempt is being made to re-establish the forest in the United States." We read that while there are some who cut timber with entire disregard to the future, the greater part of American timber is owned by responsible people, and that these private owners as well as the Governments are doing good work in the way of saving and re-growing the forests. That is good news, and it should be an inspiration to the Canadians who realize that in many parts of the Dominion the present policy is bound to bankrupt the future, and who are urging, and in some cases practicing, more enlightened methods of handling forest operations. Provincial Governments have taken several steps toward insuring the future of the forest, and in protecting the interests of Canadians who are dependent upon the conversion of the forest into marketable commodities, but there yet remains a lot of work to be done in finding out just what our forest resources are, and in imposing the proper regulations for handling them so that reproduction will be assured, and so that the ever-great function of the forest, the regulation of stream flow, shall be forever maintained.

War Uses of Pulp and Paper

By A. G. DURGIN,

Chief of Pulp and Paper Division, U. S. Bureau of Standards.

In beginning his address, Mr. Durgin said: "I have an exhibit, representing some four or five hundred samples, gathered from the American Expeditionary Forces, from the Canadian Government, from mills about the country, and from other sources, which, unfortunately, I was unable to get into New York on account of the express embargo, and because of that, I will have to submit the exhibit to your Secretary at some other time, for subsequent examination by as many of your members as may desire it."

The secretary of the Newsprint Service Bureau, before the annual meeting of which the following address was read, has given permission for its publication. He wishes to invite anyone connected with the industry who comes to New York to drop in at Room 1102, 18 East 41st Street, and inspect the interesting exhibit referred to by Mr. Durgin. If possible to do so, there will be published at a later date, pictures of some of these interesting articles. In the meantime, it will be necessary to exercise the imagination.—Ed.

Wallboards.

The exigencies of war brought into use in all of the countries, both enemy and allies, many new and novel uses of paper which prior to that time had never been considered, because no demand had been created for them. The history of war-time uses of paper and paper products in our own country commenced with the construction of cantonments. When it became evident that these enormous cantonments were to be constructed as temporary shelters and over one and one-half million square feet of wallboard was necessary for each of them, it was found advisable to devote considerable effort to determining the best board for the purpose. The War Department issued their first series of contracts prior to the completion of investigation by the Paper Section, but submitted samples from the entire lot to note conformity with delivery. No one could assume that fibre wallboard at this stage was a war product, and it is mentioned in this report for the sole purpose of showing the changes which the industry itself has undergone as a result of conditions brought about by the war. It developed that at the outset there was no relationship between quality and price and this was entirely aside from any attempt at sophistication by the manufacturers, but entirely due to the lack of critical and discriminating study of the industrial products. Definite methods for testing this material were developed by the Paper Section of the Bureau of Standards, and as a result of their work definite specifications were developed, which produced a Wallboard far superior in every particular to any produced prior to the entrance of our country into war. Sample curves submitted show the relative increase in resistance to absorb moisture between boards submitted at the start and at the close of the construction period. A great deal of work was done on waterproofing and to an extent on fireproofing these boards. In general, wallboards may be considered under two classes: these which are laminated, and those which are built in a single sheet. Samples of both of these types of boards with the curves reproducing the best development from each type are here

shown, together with many samples of the earlier product showing how much improvement had been made in the product. The total amount of wallboards of all kinds used exceeded two hundred million square feet, which a tonnage equivalent to one-fifth of that of an equal quantity of lumber. In other words, had lumber been used, over two hundred thousand additional tons of freight would have been transported. In addition to cantonment construction, fibre wallboards were used in camouflage work and the homogeneous type formed a part of ambulance body, as a substitute for wood, to reduce the danger of casualties caused by flying wood splinters when ambulances were struck by shells. Because of its strength, moisture resistance, light weight and durability, this produce gave most satisfactory results for the above-mentioned purpose. This wallboard was also used in the construction of special portable dressing stations. Sheets four feet by eight feet by three-eighths inch thickness were fitted with metal tongue and grooved edges, so that they would form a light, compact and portable structures which were easily transported, and could be erected within a few hours. The inside of these structures was enameled to secure cleanliness and ease of disinfection. During the latter periods the subject of plaster boards was investigated. This material consists of a centre of gypsum plaster with outer paper layers. Its strength, moisture, resistance and durability, together with its fire-resisting properties, recommend it as an excellent product for construction when durability is a factor. It is safe to predict that a wider peace outlet will be assured this product, and that it will be a distinct factor in competition with lath and plaster.

Gas Masks.

Immediately following the question of providing wallboards for housing our soldiers, came the demand from the Expeditionary Force to provide some material which could be used in a gas mask as protection against phenol-dichlorarsene, blue cross shell, or G-76, or sneeze gas, as it was variously named. Together with the request for this product was submitted a sample of crepe paper used by the English in their gas masks as defence against their method of attack. Actual sample submitted for duplication consisted of sheets of paper similar to exhibit No. 4, 1 inch square. Being cognizant of the fact that paper similar to this product was commercially manufactured by two mills in the United States for use as a substitute for absorbent cotton, representatives of the Paper Section were detailed, to these mills to co-operate with the Gas Defense Service of the Bureau of Mines, Chemical Warfare Service of the United States Army, and during the early part of the war, the Medical Corps, in altering this American product so that it might be more exactly a replica of the English paper. Both of the American manufacturers co-operated with the Government in the most whole-hearted manner, turning over to the Government the use of their machines, and the services of their entire staff, with the sole idea of developing in the minimum of time a product which could be considered satisfactory. Production on

the American paper, Exhibit No. 7, was started during the month of May, 1918, and the first American Gas Mask Canister was, what is known as the Cover type, wrapped with this American-made duplicate of the English paper. Modifications in warfare, however, made new changes imperative. During the months of June and July, special investigation on effect of slight alterations in the beating, machine treatment, etc., of this product was carried on in one of our American plants. The necessity for this second investigation was due to alterations in methods of gas warfare, whereby high concentrations of poisonous gases were localized by explosive shell bombardment. The second factor which made imperative a change in the type of paper used for protection was the necessity of reducing pressure drop in the gas mask to a minimum, so that men wearing them could go through the severe physical exertion contingent on defense without suffering exhaustion. Following this new development alteration was made in the type of canister, and the final canister provided was that shown in Exhibit No. —. In its special development from the metal core, which was filled with chemicals, the core wrapped with paper to the ultimate can with outside metal protection from the elements. Between the time in which the English paper was developed and the final paper product was produced by the Paper Section, numerous other developments took place. For a time the use of paper in construction of these canisters was supplanted by the use of wool. One of the wool jackets which cover canisters is shown. The shortage of wool and the expenses attendant on its production led to the investigation of the Accordion type of canister, represented in Exhibit No. —. A paper felt and every other conceivable, thought of, filtering method was investigated in attempting to provide a suitable canister of this type. The paper best suited for this purpose was a heavy sheet, weighing 500 pounds to the ream, 25x40, made from raw rags which were beaten only sufficiently long to insure their passing through the gates into the machine. Just before the signing of the Armistice, there was a project on hand to mold out of paper a type of box which could then be slipped on over the metal canister and avoid the difficulties which had been encountered in hand-winding. The wooden model exhibited is the type which was delivered to the National Federation of Box Board Manufacturers, together with samples of paper, in requesting their co-operation in the problem.

A roll of paper which was nearest perfect protection is shown in Exhibit No. —. This paper was made from 100 per cent. rag, beaten an exceedingly short time, but under conditions of control which were elaborate. Examination of the sheet will show that it is absolutely the antithesis of anything which a paper manufacturer would normally produce. Tested on the tobacco smoke machine, its protection was 99.85 per cent. perfect. It also received a high rating when tested with sulphuric acid, ammonium chloride, in the form of smoke, and in actual service tests in the gas house. Shown herewith is the experimental gas laboratory of the Paper Section, equipped so that actual man tests could be taken. The flanges shown in this picture were used for introducing the paper to be tested. The actual poison gas was to be generated in the roll shown in the picture No. —, by means of detonating bombs. The Gas Defense Service had many laboratories of this type, but very much more elaborate, scattered over the entire country, where men

were hourly subjected to physical tests to measure the protection of gas masks against various noxious and poison gases developed by the enemy. Exhibit No. — is the German canister which was worn like a muzzle, a separate section of the same showing the sheet of paper used for protection and the paper screen which formed a backing for it. This German paper was submitted to the Paper Section by the Offense for examination into its reproductibility. Analysis showed its composition to be 100 per cent. rag, and a slightly beaten stock. The exact method of its manufacture was developed by the Paper Section and several hundred samples were submitted to the Gas Offense and used by them in their research tests.

A great deal of special development work along the line of preparing satisfactory paper for gas masks was conducted by the Forest Service Laboratory at Madison, Wisconsin, and by many other commercial companies in all parts of the country. The folder will give an idea of the number of samples of paper prepared in working on this problem, each single sheet in the book represents one machine finished.

Hospital Supplies.

The shortage of cotton lead the Sergeant-General's Office of the Army and the Navy to adopt the use of paper as substitute for cotton and for use in surgical dressings. There also had developed a permanent use for this product in hospitals throughout the United States and Canada. Comparison between the paper absorbent and high-grade surgical cotton shows the following relationship. Moisture content of paper 6.27 per cent., moisture content perfect absorbent cotton 4.34 per cent. Initial rate of paper six times the initial rate of cotton. Retention by drop test, paper 17.4 cubic centimeters of water per gram; cotton, 4.6 cubic centimeters per gram. Total absorption 18.5 per cent. paper, and total absorption cotton 20.7 per cent. That this product was not confined to this country alone is evident by the sample of German wood cotton ten years old, indicating that this product has been successfully used in Germany in part at least during that period; also a sample of Cellulosavadd, made in Sweden, quantity of which was shipped into Germany during the first part of the war. The British substitute is the same product as that used in construction of gas masks.

Another product which had direct hospital use, was the crepe paper bandage, a distinct American product. This bandage was largely used by the Medical Service of both Army and Navy as a substitute for cotton bandages in cases of where dry dressings were made. It had certain advantages in flexibility in wrapping wounded joints. This flexibility resulted directly from the crepe. In personal conversation with one of the surgeons who had over two years' experience in the large American hospital at Nullev and at the front, stated that he had obtained very satisfactory results in using this material in large quantities.

Containers.

For transportation purposes certain special papers were prepared. Sample No. — shows the TNT Liner made by the E. B. Eddy Company of Hull P. O., for the Imperial Munitions Board of Canada. The quality and form of liner proved successful after several failures with other types earlier in the war. Stock is roughly 50 per cent cordage fibre, and 50 per cent sulfate. The features of the paper are strength coupled with the crepe effect to prevent bursting or rupture, and the absence of alkalinity. The features

of container manufacture are shaping a large sheet into a rectangular bag, sewed up one side, folded at the bottom, and pasted so that no paste comes in contact with the TNT crystals. It is stated that in a certain warehouse the floor gave way and the TNT boxes dropped several feet with considerable breakage of the boxes themselves, but without any loss of TNT by reason of the weight of liners. Analysis shows the sheet to weigh 77 pounds per ream, 25x40 inches, to have a bursting strength 13 points, ash 1.02 per cent, and .07 of an inch creped for each inch of original paper.

One of the important investigations conducted by the Industrial Research Division was that of producing a suitable waterproof interlining for baling. Domestic and overseas cargo space was very effectively conserved by shipping goods in bales in preference to boxes and crates. Clothing, blankets, and leather goods were so packed and shipped. Much special development work along this line was conducted by the United State Paper Laboratory at the Bureau of Chemistry. Their experiments show that papers made expansive in both directions by creping and corrugating are now available, and that these papers successfully withstand tests, although the tensile strength of the paper is very materially reduced by the creping. They, therefore, advise re-enforcing the paper in some manner.

In connection with the question of shipment, the Forest Service developed a satisfactory type of waterproof label, which consists of heavy kraft pasted by hide glue directly to the box and painted with formaldehyde. They state that the only serious objection to this method is the alteration in color which results after several months' exposure.

The development of bags of paper has received considerable progress in this country during the war. There are submitted Exhibit No. — and No. —, showing actual American developments in the line of bag production from paper. Exhibit No. — is used for shipment of onions and similar materials which are destroyed if they are not given free access to the air. Sample No. — is bagging made directly as a substitute for burlap. In addition to the above the following German samples are submitted. Sacks to replace jute and hemp bags:

1. Grain	9. Sugar
2. Potatoes	10. Borax
3. Flour	11. Salt
4. Malt	12. Cement
5. Meal	13. Coal
6. Seed	14. Soda
7. Fertilizer	15. Wool
8. Coffee	

Under date of January 2nd, Trade Commissioner H. G. Brock reports that the utilization of paper sacks and containers has very largely increased during the war, in part due to the greatly augmented harvest, and in part to shortage of raw materials. These bags were used for transportation of grains, potatoes, etc. in great number, and in lesser quantities for transportation of flour, malt, seed, etc. The advantages of these paper products are that they are of uniform tensile strength all over, that they are free from odor and do not have loose fibres which mix with the contents. The disadvantages of this are that hooks cannot be used as extensively as with the rope bags on account of danger of tearing. To substitute this arms or bags were attached to the corners of the bag, which rendered the use of hooks unnecessary.

Submission No. — consists of numerous samples of foreign twisted yarns and threads, part of which were

used in producing the German products previously referred to, others were used as substitutes for twine in wrapping. For comparison, several samples of American twines are also submitted.

Continuing in logical order toward the actual war materials, we find that the American manufacturers of explosives had sufficiently developed the technique of producing smokeless powder from either sulphite or sulphate pulp to be inaugurated just prior to the signing of the Armistice, a program which would have used enormous quantities of both of these pulps for conversion into smokeless powder. This development is not in any sense a new one. Smokeless powder from wood pulps had long been an established product in Germany. The projected output for America was somewhat in excess of five hundred tons per day from the Du Pont plant alone.

The Ordnance Department report that paper containers were used extensively for storage and shipment of powder charges for separate loading ammunition, and the accurately weighed smokeless powder charges loaded in silk bags or placed in fibre containers and the containers themselves shipped in wooden boxes. The first type of containers for cannon charges, 5 inch, 6 inch and 8-inch guns was metal-lined and the box rendered air-tight by soldered seams. These were not satisfactory for ocean shipment. The containers which have been adopted for paper charges are of two classes: first, fibre, consisting of cylindrical tubes built up of waterproof paper with metal ends crimped on; second, of steel. Because of lack of production facilities for steel containers, the paper tube was adopted for the paper charges. The acceptable design was five plies, straight wound paper cemented with asphaltum. These tubes were tested under two pounds' air pressure, Mullen test of the entire wall, twenty-four hours' submersion, and when these tests were successfully withstood they were specified for the containers. Designs in detail are shown in accompanying prints. The alternate construction made by hydraulic pressure from sulphite or sulphate pulp, perfected by the Brown Company, is shown in the third print. This container was satisfactory for 155 millimeter gun and met all tests without difficulty. The general conclusions on these fibre containers, sample Exhibit No. — and No. —, was that they were satisfactory for shipment or storage of explosives for a short time, but that they were absolutely unsatisfactory for long storage during peace conditions. The recommendation, therefore, was that further storage of explosives in these cases be eliminated and that all powder stored in fibre containers be repacked in steel.

Another war product involving the use of paper as one of the principal products in construction was the paper hand grenade, completed sample Exhibit No. —, sectional sample Exhibit No. —, accompanied by unofficial sketch. This grenade was officially known as Offensive Hand Grenade marked 3. In operation it was held in the right hand, lever firmly against grenade body, cutter pin withdrawn and grenade thrown. As the grenade leaves the hand, lever is thrown off and hits the primer. The primer ignites the fuse which in turn ignites the detonator at the expiration of five seconds, detonator detonates the high explosive with which the grenade is loaded. This type of grenade had very limited effective radius and was used more for moral effect against the enemy than for any other purpose. Its explosive charge was four ounces of TNT.

(To be concluded.)

A PLEA FROM NEW ZEALAND.

With the present agitation for putting Canadian pulp and paper products in a favorable position in foreign markets the following letter from New Zealand comes like a pin-prick. In the days just past, when paper consumers in the Island Continent could obtain supplies only by sending a Government vessel to British Columbia, it was of course impossible to find shipping for all the paper wanted, even if there was enough available. The shipping situation is not easy, even yet, but it certainly behooves our paper makers to exert themselves in an effort to put Canadian paper on a better footing in New Zealand. Now is the time to do it. The shipping situation cannot be the only reason for the small percentage of Canadian paper used there in the past.

The letter referred to reads:—

Sir,—In your issue of January 23rd, which has just reached us (April 23rd), I notice you are asking the question, "Are we neglecting New Zealand?" The reason for the inquiry is that the imports of printing paper into New Zealand during the last few years have doubled while Canada's share of the increase only amounts to £136:0:0. New Zealand publishers will agree with you that they have been seriously neglected, and they would like to feel that more consideration will be displayed towards them in the future, but they are rather doubtful regarding the outlook.

I do not think that any publishers in any part of the world have been so badly catered for during the war, as the newspaper proprietors and printers of Australia and New Zealand. Having no pulp and paper industry of our own, through neglect to developing our own resources, we are absolutely dependent on supplies from foreign countries and one after another they dried up, till, so far as newsprint was concerned we were solely dependent on British Columbia. While you in Canada were fighting over whether you would pay 2.75 or 3 cents a pound for newsprint, it was costing us as high as 10 cents to land it in New Zealand. To-day, six months after the cessation of the war, it is costing from seven to eight cents. I have paper landing at present that cost 4.20 cents, f.o.b. port of shipment, while the freight and other charges come to about 3.50 cents. I have known 5 cents per pound to be paid for freight alone from America to New Zealand, and some unfortunate publishers have been glad to get it at that. The freights at the time of writing are still \$25.00 per ton measurement, and we don't know whether to commiserate ourselves on having to pay it or congratulate ourselves that it is no worse. As a matter of sentiment, I think most New Zealand publishers would prefer to deal with Canada for the future, but you may depend upon it we are going to reach out for relief, from whatever quarter it comes and if Canada wants to maintain its connection with New Zealand, it is up to the Canadian manufacturers to study our requirements and give us the best possible treatment.

A New Zealand Publisher.

N. B. SAW MILL BURNED.

A fire, which did damage to the extent of \$140,000 destroyed the Sayre and Holly Lumber Company's plant at Chipman, last Monday afternoon, and between two and two and one-half million feet of lumber, valued at \$80,000 went up in smoke with the mill.

"Leather belting cannot safely stand above 110 deg. of heat."

TRANSPORTATION TOPICS.

Increased Costs Suggest Increased Rates.

The 48th Annual General Meeting of the Canadian Manufacturers' Association is being held in Toronto on June 10th, 11th and 12th. The report of the Transportation Committee to be submitted at this meeting shows that the net operating income for the year 1918 of all railways comprising the United States Railroad Administration was approximately \$750,000,000. As the Government, under the Railway Control Bill, guaranteed a return of approximately \$950,000,000, it will be noted that the net operating income fell short of the guaranteed return by some \$200,000,000. There does not seem to be any doubt but that the railways will be restored to private ownership or at least to private operation, possibly by the end of this year, and the opinion of those who have studied the matter seems to be that before this can take place some provision will have to be made to enable the railways to operate on a paying basis, and that a further general increase in freight rates is inevitable. If such an increase occurs Canadian pulp and paper manufacturers know, from past experiences, that they must look for a corresponding advance in their rates to United States points, as these rates, particularly to Western points, are generally speaking, predicated on the rates applicable from New England and New York mills.

Apart from the United States railway situation, the Canadian roads have their own problems as, from the report of the Transportation Committee of the C. M. A. above referred to, the increase in wages paid to Canadian railway employees, owing to the adoption by Canadian lines of the McAdoo Award, amounted to \$67,000,000. An application is now pending in the Locomotive and Car Departments of the railways which, it is estimated, will add approximately \$19,000,000 per annum to the present payroll. Increased operating expenses due to high cost of railway materials is said to represent \$14,000,000 for the present year. This makes a total of \$100,000,000, which it is estimated represents increased cost of operating Canadian railways. As against this it was figured that the 25 per cent increase in freight rates made effective in August last would increase the earnings \$43,000,000, and this was figured on the volume of traffic handled in 1917, when large quantities of war material were moving.

The removal of the 7 — per cent war tax on bituminous coal, as announced in the Finance Minister's Budget will no doubt mean a reduction of several millions of dollars annually in the Canadian Railways' costs of operation.

Re Through Ocean Bills of Lading.

Announcement has just been made that, effective July 1st, the Canadian Railways will resume the practice of furnishing through rail and ocean bills of lading for transatlantic freight.

For the last few years, due to the uncertain shipping conditions, the railways have discontinued furnishing through ocean bills, and have only been issuing bills of lading to the seaboard, which then had to be exchanged for ocean bills as soon as the freight cleared. This meant considerable inconvenience to the exporter and delay in having his documents reach consignee.

FIRST AERO FOREST PATROL.

Three Rivers, June 8. — From Halifax to Three Rivers by air is the feat terminated to-day by Lieut. Graham, his wife and their mechanic. They arrived at Three Rivers at 3.10 this afternoon and greeted by a throng of people.

This flight from Halifax to Three Rivers was made in one of the hydroplanes the St. Maurice Forest Protective Association has procured to patrol timber limits in Quebec province. Lieut. Graham has been engaged for this aerial patrol.

The aviators left Halifax on Friday last and went to St. John, N.B., the next day. They left on Friday afternoon for Lake Temiscouata, but were forced to land in Maine owing to a severe electrical storm they encountered.

From there they flew Saturday to Lake Temiscouata, landing in the course of the afternoon, and thence they started for Riviere du Loup at 6.15 p.m. Saturday, arriving there fifteen minutes later, having covered over thirty miles in fifteen minutes.

At Fraserville the flying machine softly slid downward, dropping gently in the waters of the St. Lawrence, at the Riviere du Loup point. There were hundreds of persons at the point and when the aviators landed after circling above the city, a regular procession of automobiles, motorcycles and rigs of all sorts started for the point.

The three aviators anchored their hydroplane, were rowed ashore and were interviewed by The Gazette. They stated that their trip, generally spaking, had been splendid. They saw a number of forest fires on their way west from St. John, N.B., but none very grave.

Their progress from the Maine border to Fraserville was somewhat hampered by poor gas they bought there, and at Fraserville they looked for a new supply of gasoline. Finally the St. Lawrence Furniture Company, to help the aviators, sent three drums of its supply of gasoline down to the water grant and into the tanks of the hydroplane.

Early Saturday evening the aviators attempted to fly from Fraserville to Quebec, but the heavy sea prevented them from taking to the air. It was finally decided that the flight from Fraserville to Three Rivers would be postponed until Sunday.

At one o'clock this afternoon the hydroplane left Fraserville. She did a splendid flight passing Quebec city shortly after two and landed at Three Rivers at 3.10. At Three Rivers they were officially received by the Hon. J. A. Tessier, provincial Minister of Highways and also mayor of Three Rivers; by Mr. R. F. Grant, president of the St. Maurice Protective Association; Mr. Sorgius, manager of the St. Maurice Forest Protective Association, and Ellwood Wilsop, of the board of directors.

Mrs. Graham was presented with a bouquet of roses by Mrs. Tessier and the aviators were then taken in automobiles to their hotel. They had dinner and then departed again in their hydroplane at 6.30 to-night for Lae a la Tortue, seventy miles north of Three Rivers.

Ending the first commercial flight in Canada, and wearing lightly the honor of being the aerial pioneer of the uncharted sky between Halifax and the St. Maurice river Lieut. Stuart Graham, with his wife as navigator and a mechanic, brought his seaplane to a stop on the placid waters of Lae La Tortue, a mile and a half from Grand'Mere at 7.10 o'clock Monday evening, coming from Three Rivers in twenty minutes.

Lieut. Graham speaking of the report that he had been forced to land in Engle Lake, when Lake Temiscouata had been his objective, because of a heavy thunderstorm, said that he had dodged the storm and had landed in Engle Lake in error. The maps he carried were not too good, and the two lakes looked much the same. The only other experience the party had was at Riviere du Loup when attempting to get up for the flight to Quebec. The water in the river was rough and his navigator received a good drenching, when the nose of the craft dipped. Generally speaking the trip had been uneventful and the seaplane had stood the journey well. Lieut. Graham was met by Mr. Ellwood Wilson, a director of the St. Maurice Forest Protective Association, Mr. Wilson explained that the plane, with another to be flown from Halifax had been placed at the disposal of the association by Hon. C. C. Ballantyne.

Lieut. Graham on Tuesday left for Halifax to bring the second plane to Grand'Mere. Both will be used for spotting and reporting fires and for survey work.

This ends the first chapter of the most radical advance in the field of forest fighting. Further developments will be watched with great interest.

A GOOD SHOWING FOR B. C. IN JAPAN.

The Japanese consumption of pulp is approximately 180,000 tons. Of this amount 80,000 is produced in Japan, and 100,000 tons are imported. The Whalen Co. of Vancouver, B.C., it is estimated, furnished at least one-third of the amount of pulp that was imported by Japan last year. Under proper management this company will be able to compete with the Swedish pulp.

Mr. A. E. McMasters, who has been secretary treasurer of this company since January, 1919, states that the daily output of the company at present is 180 tons, divided up about evenly between the three plants located at Port Alice, Swanson Bay and Mill Creek.

BIG FOREST BURNING.

With the loss by fire of twelve million feet of lumber, valued at about \$500,000, one of the worst forest fires ever known in Quebec province, has ravaged the wood of the Chaleur Bay Mills Company, near Restigouche, in Bonaventure county, for several days. The blaze started on Saturday and has continued unchecked, threatening the mill and the little surrounding village, only the desperate efforts of the seven hundred souls employed in the mill saving their homes.

The company's head office is in Sherbrooke, and the firm conducts an extensive lumber business, shipping large quantities to France and Belgium.

Mr. Dorais Panmeton, a director of the firm, says the loss is entirely covered by insurance.

BOOTH'S TAXES.

In contending that the occupation of valuable land in Ottawa and not paying municipal taxes is working a hardship on industries. The mayor of that city said:

"Mr. Booth's industries and employees do not demand from the city anything like the same costly civic standard of living required by the Government and its employees. Mr. Booth, with 2,000 employees, pays \$75,000 in taxes and water rates. In the same proportion the Government with 12,000 employees should in fairness pay \$600,000, and then a great deal more."

SENDING PAPER REPRESENTATIVE TO LONDON.

Pulp and paper manufacturers to the number of two score, met in the Ritz-Carleton recently and discussed ways and means of improving their export business with Great Britain.

It was voted to send Mr. A. L. Dawe, secretary of the Canadian Pulp & Paper Association, to London, to act as pulp and paper advisor to the Lloyd Harris Canadian Trade Mission, the suggestion that an expert familiar with the industry be sent, coming from Mr. Harris himself.

Mr. Dawe has been with the Pulp and Paper Association for some years, and prior to that was engaged in the paper trade both here and in England.

A long discussion took place, concerning the difficulty of obtaining shipping and the excessive freight rates now in force between Canada and Great Britain, the prevailing sentiment being that Canada ought to be prepared to look after her own shipping interests at the present time without depending so much upon the Old Country. It was stated at the meeting that some ships now owned by the Canadian Government are being employed in bringing foreign products to this country from Cuba and elsewhere, which might better be employed in carrying Canadian products, such as pulp and paper for which there is a steady demand, to England, under such arrangements as would make it possible for Canadian producers to meet foreign competition. It was also stated that the American shipping board has diverted several ships to the St. Lawrence route, some of which were reported as being now engaged on cargoes in Montreal. Efforts will be made to obtain space on these boats for Canadian pulp and paper exports. The statement was also made that this diversion of American shipping is but the beginning of a regular service between Montreal and Liverpool by ships owned by the American Government.

Mr. J. A. Bothwell, president of the Canadian Pulp & Paper Association, presided at the meeting, which was open to anyone interested in the industry.

EXPLORING THE RAG MARKET.

Mr. E. Pullan, one of the largest dealers in Canada in waste paper and rags, has returned to Toronto from an extended business trip to England, where he has been looking into the possibilities of export, particularly in the rag line. He reports that the chief difficulty in the way at the present time is the very high freight rates, which run as high as 3½ cents a pound. He has shipped a few cars, but the prospects of big business at the present time with the excessive carriage charges and the scarcity of bottoms are not very bright. The rag and paper stock market is dull at present, and the mills are buying only in limited quantities. Board plants are fairly active and prices are well maintained, but the proprietors hesitate about stocking up and are simply marking time in the matter of purchases.—World's Paper Trade Review.

MR. MEAD ON BUSINESS CONDITIONS IN EUROPE.

"We found business conditions in France and England better than we had expected," said George H. Mead, president of the George H. Mead Company and the Mead Pulp and Paper Company, Thursday, when commenting upon this trip to Europe, where he spent about four weeks, accompanied by H. E. Talbott,

jr., investigating industrial conditions and attending to some matters of business connected with the paper industry.

"The pulp and paper situation, especially, we found in much better shape than we had expected to find it," continued Mr. Mead. "Of course, I gave particular attention to this branch of industrial activity and am consequently in better position to discuss it than I am in talking about other lines. However, I was impressed with the sentiment that business conditions both in France and England are much more encouraging from the standpoint of those nations, than I had expected to find them.

"There is but little complaint heard as to the burdens resulting from the war and everybody seems to be working together to the end that its effects may be overcome as quickly as possible," said Mr. Mead. "There exists a remarkable unanimity of sentiment and both England and France are proceeding rapidly on the highway to business success and consequent industrial development.

"A great many of the plants are operating only on half time," he declared, "but there is bright promise that ere long they will not only be running at full capacity but expanding and conducting their various lines of trade upon an almost unprecedentedly prosperous basis. The people are anxiously awaiting the signing of the peace treaty, believing that the successful negotiation of that instrument will tend to steady matters and establish a more substantial foundation, upon which to build. It is the consensus that the League of Nations would become a strengthening factor of the peace treaty. In fact, the belief exists that without the League of Nations, the treaty consummation would be found almost impossible."

Mr. Mead said that according to all indications, there is an abundance of money in circulation in France and England and that the situation there generally is far from being hopeless. Mr. Mead and Mr. Talbott spent one week in Paris and two weeks in London.

CROSSLEY HANGS OUT HIS SHINGLE—OR IS IT A CHIP?

Mr. T. Linsey Crossley, A.M.E.I.C., who has been associated for a number of years with Dr. J. T. Donald, of Montreal, and who established the Toronto laboratory of J. T. Donald & Company, consulting chemists, has taken over the Toronto office and laboratory of that firm at 43 Scott street, and will there carry on the business of consulting chemist and chemical engineer. Mr. Crossley acted as chemist and draughtsman for several years with well-known firms in the pulp and paper industry. During the war, his time has been largely taken up with work for the Imperial Munitions Board.

It is safe to say that no one in Canada, not directly in the employ of a pulp or paper mill, has worked harder for the success of the industry than has Mr. Crossley. Since the formation of the Technical Section he has been chairman of the Committee on Vocational Education, and in other ways has contributed to the work of the Section. The Pulp and Paper Magazine wishes Mr. Crossley the success he deserves in his chosen field.

The word "newspaper" does not come from something "new," but is derived from the initial letters of the four quarters: north, east, west, south.

UNITED STATES NOTES

The George W. Diamond Company, recently organized in Wisconsin with a capital stock of \$200,000, at a meeting of its stockholders held in Milwaukee last week, increased its total stock to \$2,000,000, and decided to erect its plant at Depere, Wisconsin, upon which construction work will begin at once. A patent paper box machine invented by George W. Diamond, organizer of the company, will be the main product of the machine shop, and it is planned to use the mill for the manufacture of a patented coated chip board, which will be converted into boxes. Three shifts of 150 men each will be employed and, according to Mr. Diamond, the mill will have a capacity of 80 tons every 24 hours.

Statistics prepared by the Federal Trade Commission show that during 1918 wood pulp consumption by the pulp mills of the United States approximated 5,258,305 cords, and the production recorded by the same mills amounted to 3,313,032 tons of pulp. A decrease of four per cent from the 1917 figures is shown in the consumption of pulp wood and the wood pulp production was 51½ per cent under the figures for 1917. The 1918 production of mechanical or ground wood pulp fell off 11 per cent as compared with 1917, and that of soda pulp 20 per cent. The production of sulphur pulp, however, was 80 per cent in excess of the quantity reported for 1917.

The Forest Products laboratory of the University of Wisconsin at Madison, is continuing its wartime experiments with wood pulp as a source of explosives. The investigation was first taken up during the war due to a threatened cotton shortage. The production of acid and sulphate pulp suitable for nitrating have other peace time applications as in the manufacture of lacquers, pyroxylin or gun cotton, products such as collodion, celluloid and certain varnishes. Various methods were developed as a result of the experiments for the production of acid and sulphate pulp suitable for nitration purposes. This suitability was proved conclusively by tests made at a government arsenal.

The Pacific Coast Advertising Men's Association opened its convention last Sunday at Portland, Oregon, with a display of the printer's art which cost several thousand dollars to assemble as a special feature of the exhibits. Prominent publishers, advertising experts, educators and public officials of the Pacific Coast composed the galaxy of speakers during the four-day session.

A general improvement in conditions during the month of May in the folding paper box industry was reported by members at the thirteenth membership meeting of the Folding Box Manufacturers' National Association held May 29, 30 and 31 at the Hotel Traymore, Atlantic City, N.J. After the signing of the armistice last fall the volume of business had fallen off on an average of 25 to 35 per cent, but early in April an improvement in conditions set in which has brought up the volume in a number of establishments to a nearly normal standard. The outlook for the future is regarded as very favorable.

Captain Dudley Field Malone, who responded to the toast "Our Guests" at the Pulp & Paper Banquet has just finished an interesting case. He defended Skipper Pederson and his son Adolph, who were on trial in New York for the murder at sea of Axel Hanson. It was charged that Adolph chased Hanson overboard and the Skipper countermanded an order to come about for his rescue. Both Pedersons were acquitted.

Prof. C. W. Easley, head of the Chemistry Department at the University of Maine, which includes the courses in Pulp and Paper Technology, has accepted a position at Syracuse University. Dr. McKee, who started the courses at Maine, is to read a paper on Alcohol from Sulphite Waste Liquor at the Technical Association meeting at Buffalo.

ANOTHER SUIT AGAINST THE PUBLISHERS PAPER CO.

The Brooklyn Standard-Union has brought suit against the Publishers Paper Company for \$3,558.25 for non-delivery of paper on contract. The Standard Union alleges that this sum in question represents paper paid for, but not included in the company's deliveries.

GORDIAS GOULD DEAD.

Gordias H. P. Gould, president of the Gould Paper Company of Lyons Falls, N.Y., and president of the Donnacona Paper Company of Donnacona, Quebec, died Monday night at the Clifton Springs Sanitarium, Clifton Springs, N.Y., where he had been under treatment for the last five weeks for inflammatory rheumatism. Had he lived until Tuesday Mr. Gould would have been 71 years of age. For many years Mr. Gould had been a prominent figure in the newsprint manufacturing business, and he was widely known among the manufacturers and publishers. He had just been elected President of the Newsprint Service Bureau.

HOWARD SMITH PAPER BONDS.

A public offering was made recently by A. E. Ames & Co., and Nesbitt, Thompson & Co., of an issue of \$800,000 6 per cent, first mortgage, fifteen-year sinking fund gold bonds of the Howard Smith Paper Mills, Ltd. The bonds are offered in denominations of \$100, \$500 and \$1,000 at 93 and interest, to yield 6¾ per cent.

A. E. Ames & Co. point out that the assets securing the bonds are over 2¾ times the amount of the bond issue; that the current earnings exceed those for 1918 which were over four times the bond interest requirement and that the maturity of the bonds is a desirable one.

The company has two mills, the Beauharnois and the Crabtree, both located near Montreal, and at the present time turns out about 79,000 pounds of high-grade bond and ledger paper per day.



Technical Section



CANADIAN MILLS TO ENTERTAIN.

It is regretted that the excellent program for the Technical Association meeting arrived too late for publication last week. Blame it on Burleson! In addition to the visits at Erie and the fine program of papers on Thursday, there is an interesting schedule of mill visits for Friday and Saturday. One of two trips may be chosen Friday morning, either Niagara Falls or Buffalo. The former includes several paper mills. In the afternoon the members and friends will visit the National Aniline and Color Co., a printing plant, and the Buffalo Foundry & Machine Co.

CANADIAN DAY.

Saturday, June 14, will be Canadian Day. Many are the happy recollections of when the Technical Section met on the Peninsula in June, 1916.

Members of the association will be the guests of the Pulp and Paper Manufacturers of the Niagara Peninsula for the day. Special trolleys will leave Hotel Statler promptly at 8:30 a.m., travelling over the High Speed line. The trolleys will be met at Niagara Falls by the Canadian Committee and the party will proceed by automobile.

Around Goat Island, viewing both Falls, thence to Victoria Park, and through Lundy's Lane, famous as a battle ground of the War of 1812, past Blackhorse Tavern, at one time well patronized, but now dry. The following Canadian mills will then be visited:

Beaver Wood Fiber Company, Ltd.
Ontario Paper Company, Ltd.
Foley-Rieger Pulp and Paper Co., Ltd.

Luncheon will be served at Grenville Hall, Thorold, Ont. The following mills will be visited during the afternoon:

Provincial Paper Company, Ltd.
Thorold Pulp Co., Ltd.
Interlake Tissue Mills, Ltd.
Riorlon Pulp & Paper Co., Ltd.
Lincoln Paper Mills Company, Ltd.
Garden City Paper Mills Co., Ltd.
Kinleith Paper Mills, Ltd.

Then return from St. Catharines, Ont., to Niagara Falls, N.Y. The return ticket to Buffalo entitles the holder to come on any trolley, so that opportunity will be given to view the Falls after the close of the excursion to Canadian mills to all who may desire to do so.

The following firms have assisted in the work of the convention:

Beaver Board Company.
Bige and Sons Company.
Buffalo Foundry and Machine Company.
Cliff Paper Company.
Hammermill Paper Co.
Larkin Company.
Lockport Felt Company.
National Aniline & Chemical Co.
Niagara Wall Paper Company.
Pettebone-Cataract Paper Company.
Spaulding & Sons Company.
Tonawanda Board & Paper Company.
Upson Company.

and

Canadian Mills, Hosts on June 14.

The Canadian Reception Committees are as follows:

Manufacturers.

Beaver Wood Fibre Co.: T. H. Neville, Mgr., and E. G. Callahan, Supt.

Ontario Paper Co.: Warren Curtis, jr., Mgr., John F. Ryan, Supt.

Foley-Rieger Pulp & Paper Co.: Ed. P. Foley, Mgr., Joseph Foley, Supt.

Provincial Paper Mills: T. A. Weldon, Mgr., Dan Dayerin.

Interlake Tissue Mills: Geo. Carruthers, Mgr., J. J. Herb, Supt.

Thorold Pulp Co.: E. H. Morris, Mgr., James Wilson, Supt.

Riorlon Paper Mills: P. Byrne, Mgr., V. Salmonson, Supt.

Lincoln & Lybster Mills: W. D. Woodruff, Mgr., E. L. Kinsey, Supt.

Garden City Paper Mills: L. H. Gardner, Mgr., E. Burgess, Supt.

Kinleith Paper Mills: H. F. E. Kent, Mgr., W. A. Anderson, Supt.

Thorold Board of Trade: A. B. Begg, A. Martin, sr., J. E. Carpenter, L. H. Needham, J. A. Batten, L. B. McCleary, A. F. Robertson, D. R. Crombie, Robt. McPherson, Dr. C. B. Macartney.

The committee plans to have fifty automobiles to convey the guests about St. Catharines, Merrittton and Thorold.

ANOTHER NEW MEMBER.

Albert Tilton, superintendent of the groundwood pulp mill of the Quebec and Saguenay Pulp Co., at St. Amede de Peribonka, Que., has been elected to membership in the Technical Section. Mr. Tilton is a graduate of the University of Maine, where he specialized in Pulp & Paper Technology, and has had several years' practical mill experience.

REVIEW OF RECENT LITERATURE.

B-2. Studies on nitrification in natural soils and its importance from an ecological point of view in Sweden. H. Hesselmann. *International Rev. Agri.*, June, 1918, p. 662.—C. L.

B-2. The red spruce; its growth and management in the United States. L. S. Murphy, *Bulletin No. 544*, U. S. Dept. of Agriculture, Washington, D.C.—This bulletin discusses the methods of management best suited to various conditions. It is estimated that, under average natural and uniform conditions, 50 to 60 years are necessary for the maximum production of wood used for paper pulp. If judicious thinning is carried out this period may be shortened by 5 to 10 years. For timber production 100 to 120 years either in virgin or selection forests are required. The bulletin contains many volume and measurement tables.—C. L.

B-2. The second crop of pulpwood. H. C. Belyea. *Can. For. J.*, Aug., 1918, p. 1836.—Discusses the factors influencing the rate of growth in the virgin forest and on cut-over pulpwood lands. Growth under a heavy crown cover in virgin forest is not to be accepted as part of the productive forest, and can not be used as a measure of future possibilities. The effect of the removal of the over-topping trees is an increase in the growth of surviving suppressed ma-

terial. This emphasizes the necessity for the utilization of the hardwoods in our mixed forests operated primarily for pulpwood.—C. L.

B-1. Grow trees for aeroplane building. E. Wilson, *Can. For. Journal*, Aug., 1918, p. 1813.—Recommendations for future supplies of suitable eastern spruce.—C. L.

B-2. Vegetation as an indicator of the fertility of sandy pine plains soils in northern Wisconsin. T. J. Dunnewald, *International Rev. Agri.*, April, 1918, p. 416.—The soils of sandy plains vary considerably in their ability to produce a second growth after the removal of the pines, and after the many severe fires which succeeded logging operations. The undergrowth of cleared woodland is a good indication of the cropping capacity of the soil. Heavier growth shows a higher content of plant food, the presence of more fine material in the soil, and especially a greater moisture-retaining capacity, enabling the vegetation to resist drought.—C. L.

B-3. Forest fires in the United States in 1915. J. G. Peters, Circular No. 69, office of the Secretary, U. S. Department of Agriculture, Washington, D.C.—The statistics contained in this circular represent the first attempt at an annual estimate of forest fires in the United States. In general, the most comprehensive reports were those obtained from States with recognized fire protective systems, and from the National forests. The statistics represent about 56 per cent of the forest area of the United States. The total area burned is estimated at 3,306,650 acres, and the total loss as slightly over \$4,000,000. The estimate for the entire area of the United States would be around 6,000,000 acres burned, with a loss of approximately \$7,000,000. The returns obtained in the United States show that where there is a protective system most of the fires can be controlled before making headway, and that extensive and destructive fires are few as compared with states having no such protective system.—C. L.

B-3. The holocaust in Minnesota. E. G. Cheney, *American Forestry*, Nov., 1918, p. 643.—A description of the great fire of Oct. 12, 1918, which devastated large areas in Northern Minnesota. See also "The Great Minnesota Fire," by J. F. Hayden, at p. 648 of the same issue. The loss of life in these fires was estimated at 1,000,000, and the property loss at well up toward \$100,000,000. Editorial discussion on p. 652. Press comments pages 654 and 655. See also editorial comment in December issue, p. 755.—C. L.

B-4. Mill scale study of red and white oak. David G. White, *Amer. Lbrman.*, Oct. 12, 1918, p. 47.—The basis for accurate accounting can best be secured through a mill scale study, the purpose of which is to get information on the quantity and quality of lumber that can be produced, the rate of production per hour, and the cost of manufacturing from different classes of logs; also the relative cost of sawing per 1,000 feet net lumber tally, and the waste in manufacturing lumber. The possession of information of this kind should enable mill operators to improve their methods of manufacturing and accounting. This article reports the results of separate studies of red and white oak in Arkansas, made under the auspices of the U. S. Forest Products Laboratory.—C. L.

B-4. The motor truck in logging. *Can. For. Journal*, July, 1918, p. 1798. Advantages and disadvantages; comparison with team haul, railways, etc.; importance of good roads.—C. L.

B-4. Martime pine operation in France. Capt. John D. Guthrie, A.E.F., *American Forestry*, Nov., 1918, p. 657.—C. L.

B-4. The uses of wood; woods used in the manufacture of handles. Hu. Maxwell, *Amer. For.*, Nov., 1918, p. 679.—Discusses the many different species of wood used for handles, and their relative merits. The annual demand for wood by handle makers in the United States approximates 280,000,000 feet, consisting of 33 kinds, of which four are softwoods, 23 native hardwoods, and 8 hardwoods of foreign origin. Hardwoods contribute more than 99 per cent of the whole. Twenty billion feet of standing hickory remain in the United States.—C. L.

B-4. Where and how to use thin saw. Lee Prior, *Amer. Lbrman.*, October 12, 1918, p. 53.—Suggestions looking toward the avoidance of waste in the manufacture of lumber.—C. L.

B-4. Effect of the war on forests of France. Col. Henry S. Graves, *Amer. For.*, Dec., 1918, p. 709.—France has given much of her forests to the needs of the war. The burden is already felt by the people through local scarcity of forestry materials, and through high prices. It is predicted that France will have to import much of the timber needed for reconstruction. In the portion of France occupied by Germany the forest capital was largely destroyed and will have to be rebuilt through long years of patient effort. The forests in the rear also suffered seriously, through the necessary cutting of timber for the use of the Allies.—C. L.

E-0. Wood-pulp in Argentina. (La pate de bois en Argentine). *Le Papier*, 22, p. 56 (1919).—Until lately Argentina was dependent on Scandinavia and Canada for most of its pulp. Attempts were made to make sulphite from Araucaria pine, but did not meet with success. Two years ago the Phoenix paper mill began erecting a pulp mill for using poplar and willow, which mixture has given excellent results. When mixed with an equal proportion of imported sulphite, a satisfactory paper is obtained at about the same price as that paid for imported newsprint rolls. The mill is modern in every detail, and turns out newsprint, wrapping paper and paper bags.—A. P.-C.

R-1. Paper from bagasse. (Le papier de bagasse.) *Chimie & Industrie*, 2, p. 237, (1919).—A paper mill with a daily capacity of 165 tons is being erected at Oloa (Hawaii) for the manufacture of all kinds of paper. This production will utilize only one-tenth of the available supplies of bagasse of the sugar factories of Oloa. The mill has been planned with a view to being gradually expanded so as to ultimately utilize all the available supplies of bagasse, should the venture be successful, in which case the output could reach 165 tons a day, and even more should the factories in the other islands follow this good example. The mill cannot start for another year, as the required machinery could not be obtained during the war.—A. P.-C.

R-5. The paper industry in India. (L'industrie papetiere dans l'Inde). *La Papier*, 22, p. 59 (1919).—In spite of its vast forest areas, India produces only 50,000 of the 75,000 tons of paper annually consumed, and even this production is at times maintained only by the importation of European pulp, and the production has been practically stationary for the last ten years. The erection of several new pulp and paper mills is projected to put an end to this abnormal situation.—A. P.-C.

PULP AND PAPER NEWS

C. N. Ramsay, of Ritchie and Ramsay, Limited, coated paper manufacturers, Toronto, accompanied by his wife and daughter, left recently for England, where they will spend the next few months.

Sir George Bury, the newly appointed President and chief executive of the Whalen Pulp and Paper Co., Vancouver, has arrived in that city to begin his new duties. Sir George, who will take up his permanent residence in Vancouver, expressed every confidence in the future of the pulp and paper industry of British Columbia, and believed there will be a rapid advancement in the expansion of the markets and output.

S. J. Frame, of Toronto, secretary-treasurer of the Canadian Paper Box Association, which convention will be held at the Windsor Hotel, Montreal, commencing on Tuesday, June 24, to be followed by a trip down the St. Lawrence as far as the Saguenay river, arriving back in Montreal on Friday, June 27, reports that the prospects are bright for a record breaking attendance. The gathering is expected to be one of the most successful and profitable from every standpoint held in the history of the association.

J. L. McNicol, of Ottawa, assistant paper controller, was in Toronto this week on a visit to his son, Gilbert McNicol, who is employed in the Don Valley paper mills.

A. M. Huestis, of Toronto, who is the Canadian representative of the Kalbfleisch Corporation of New York, spent the past week in Montreal and New York on a business trip.

Wm. O. Cameron, representing the Richmond Paper Co. of Halifax, N.S., was in Montreal recently calling upon the trade.

A. B. Rilance, manager of the National Manufacturing Co., Vancouver, B.C., was in Toronto lately calling upon the paper trade.

Owing to the death of W. P. Gundy, President of W. J. Gage and Co., manufacturing stationers, Toronto, there has been a reorganization of the officers of the company. H. H. Love, who has been identified with the company for the past ten years, and has filled the position of Vice-President, has been elected president, and H. F. E. Kent, who has been assistant general manager, has been appointed Vice-President and Manager. Mr. Love is a son-in-law of Sir William Gage, who will continue as Chairman of the Board of Directors. The reorganization of the Kinloch Paper Mills of St. Catharines, of which the late Mr. Gundy was also President, has not yet been carried out. The plant after being shut down for two weeks owing to the repairs to the old Welland Canal resumed last Friday, and during the cessation of operations was completely overhauled so that the equipment is in excellent shape. The mill has a good back of orders on hand.

A charter has been secured to Wandell Holmes Limited, with headquarters in London, Ont., and a

capital stock of \$40,000 to carry on the business of booksellers, publishers and printers, and to deal in paper, books, stationery and office supplies.

E. N. Harcourt, of the E. H. Harcourt Co., Limited, lithographers, Toronto, was married recently to Miss Gertrude Charlotte Kingsley, daughter of Mr. and Mrs. E. L. Kingsley, Toronto. Mr. Harcourt and bride left on a motor trip through a number of cities in the U. S., and on their return to Toronto will take up residence at 71 Hepburne street.

F. C. Sutton, representing James Lumsden, Son & Co., Limited, wholesale stationers, Glasgow, Scotland, was in Toronto and other cities recently seeking to place orders for large quantities of paper for overseas.

Serge E. G. R. Clarke, of Toronto, who has been with the Canadian Expeditionary Force to Siberia, has sailed from Vladivostok for Canada, and is expected to arrive home in a few days. His many friends in the paper trade will be glad to welcome him back.

The Interlake Tissue Mills, of Merrittton, are sinking a six inch well, which has already been drilled to a depth of one hundred feet. The well will be sunk probably a hundred and fifty feet in the hope of obtaining a supply of pure fresh water for the filtering plant of the company.

Miss Cecil M. Davis, of the head office staff of the Provincial Paper Mills Co., Toronto, is spending her holidays in the Muskoka district.

Norman E. Wainwright, of the Canadian Export Co., Montreal, was in Toronto during the past week. He was accompanied by Mr. Weston, of New York, who has been appointed South American representative for the Canadian Export Paper Co. Mr. Weston is well known to the members of the industry in the Dominion, being a former member of the staff of Barber-Ellis, Limited, Toronto.

Hal Choate, for the past years on the staff of the Toronto Times, and more recently managing editor, has resigned and has been succeeded by Mr. West, late of the Border Cities Star, Windsor, Ont.

The original drawing of the trade-mark, which has been adopted by the Canadian Pulp and Paper Association, and will appear on the wrapper of every package, has been purchased from the Association by the Provincial Paper Mills Co. of Toronto, who paid \$100 for the work, which was the production of Harold McEvers, of the Department of Architecture of McGill University, Montreal. Mr. I. H. Weldon, President of the Provincial Paper Mills Co., will have the device framed and hung in his office. In the years to come it will be a very valuable souvenir, of which Mr. Weldon has a number connected with the industry.

C. Nelson Gain and Harry L. Muir, of the Don Valley Paper Co., Toronto, spent the past week in Montreal on business. Mr. Muir is to take care of the customers in this district, where the trade has increased very much.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, June 9.—If there is one industry in Canada that is alive and aggressive, it is the pulp and paper industry. Instead of sitting down and waiting for trade to come its way, the organization is getting right after foreign business. The members will not be content until they secure all the orders they can comfortably take care of in addition to catering to domestic demands. The Association has not only adopted a representative trade-mark, but has decided to send a representative to Great Britain to act in conjunction with the Canadian Trade Mission. In the selection of A. L. Dawe, the energetic secretary of the Association, it is unanimously admitted that a better appointment could not be made, for Mr. Dawe is familiar with the trade from all angles. He has had the requisite experience in the Old Country and Canada to give weight, service and responsibility to the post, and possesses the necessary technical knowledge of paper, manufacture, organization, shipment, etc.

In addition to all this the Canadian Pulp and Paper Association is entering upon an extensive campaign of advertising, which will tend to familiarize the consumer with the trade mark of the industry, and asks customers to look for the triangle on the wrapper of every package that they buy. The Association is pointing out that Canadian printers and others should employ Canadian-made paper, and points out the incongruity of certain firms using foreign-made papers for booklets that tell people to use Made-in-Canada goods. It is further emphasized that the best paper for whatever purpose required is made right in this country, and this fact should never be forgotten.

There is no doubt that the wide publicity campaign will have a beneficial effect and by means of the propaganda there will be sounded forth a note that, while during the war there may have been some excuse, on the ground of economy and convenience, in using poor paper and poor printed matter that day is now past and the "better the paper the better the booklet." Coincident with this publicity work of the Canadian Pulp and Paper Association is the advertising being done by the Toronto Master Printers and Bookbinders' Ass'n, who point out that everything that goes into the making of printed matter now costs more than it did a year ago, and that on

top of this, a heavy advance of union wages became effective at the first of the month, the increase being 33 1-3 per cent. It is stated that Toronto printers had no alternative, therefore, but to advance prices, but every effort will be made by the printers to see that work justifies fully the cost of its production.

The newsprint mills are making a fine showing, and working under good conditions. Production has been increased during the past four months by some 10 per cent owing to favorable running conditions, while there has been an increase of stocks on hand. The number of inquiries coming in from abroad continues to grow, and shows that many countries are looking upon Canada as the great pulp and paper producing land of the world. The one barrier shipping facilities, but steps are now being taken to overcome this handicap as much as possible, and it is expected from now on there will be a decided improvement. The fact that one large book and writing paper concern is adding another machine, that a large sulphite plant is installing another digester which will increase its capacity by one-third, that another plant is being erected with an output of 125 tons a day of bleached sulphite, and other organizations will early next year go ahead with extensions both to buildings and equipment, shows that the trade intends to keep pace with the world-wide augmented demand.

There may be an increase in book and writing paper prices in the near future owing to wages being constantly in the ascendancy. There have been no changes in prices on any papers during the past week, and jobbers report a good business with an active requisition in all lines. Deliveries are reported pretty fair, and those who have been expecting cheaper rates in the pulp and paper line are doomed to disappointment.

It is semi-officially announced that another increase in freight rates is likely to be expected on all Canadian roads in the near future, on the ground that the present charges are insufficient for carrying companies to meet operating and maintenance costs, and also because of the high and growing outlay for materials and labor. The increase, which will be asked will, it is rumored, be 20 per cent. During the past year two increases were granted, one of 15 per cent and another of 25.

Scandinavian American Trading Co.

50 E. 42nd STREET TELEPHONES 2074 MURRAY HILL, NEW YORK
2075

Write us when you
have any surplus
of

Ground Wood

Bleached or Un-
bleached. We are
always in the mar-
ket.

It is rumored that the Ontario Paper Co. of Thorold, Ont., intend in the near future to double its newsprint capacity, while the Drompton Pulp and Paper Co. has just put in operation a second machine, adding 100 per cent to its output of newsprint. Envelope manufacturers and manufacturing stationers are busy at the present time, and some of the former are going after export business. Paper coating plants are active, and expect to be busy all the summer. The water conditions at all pulp mills have been good, and the market for sulphite is improving steadily, while prices are holding firm. Outside of the unrest in labor circles and lack of ocean carriage facilities there are not many distributing elements in pulp and paper manufacturing circles at the present time.

The output of pulp wood in the Sudbury district will this season be about 15 per cent greater than last season, and the wood has been practically all cut from the concessions of the pulp and paper companies, according to reports received from the Crown Timber Agent of Sudbury, who also states that lumbermen will have their output of logs to the mills much earlier this season owing to drivers being more plentiful and the water for floating the logs good.

There is a better demand for all grades of new cotton rags in Canada and the United States, and American packers are anxious for stock. There is a slight demand for news and mixed papers, but not many calls for the more expensive lines. The market is about the same as last week.

Rag and Paper Stock Prices.

No. 1 white envelope cuttings	\$3.60
No. 1 soft white shavings	\$3.00
White Blanks	\$1.10
Heavy Ledger Stock	\$2.00
No. 1 magazine	\$1.30
No. 1 book stock	\$1.20
No. 1 manilas	\$1.65
No. 1 print manila . . . . .	.70c
Folded news . . . . .	.70c
Over issue, news . . . . .	.80c
Kraft	\$2.50
No. 1 clean mixed papers . . . . .	.60c
No. 1 shirt cuttings	10 1/2
No. 1 unbleached cotton cuttings	9—9 1/2c
No. 1 fancy shirt cuttings	7 1/2c
No. 1 blue overall cuttings	7 1/2c
Bleached shoe clip	8—8 1/2c
White cotton hosiery cuttings . . . . .	.10c
Light colored hosiery cuttings . . . . .	.71c
New light flannelette cuttings . . . . .	.71c
No. 2 white shirt cuttings . . . . .	.71c
City thirds and blues (repacked), No. 1 . . . . .	.31c
Flock and satinettes	\$1.80
Tailor Rags	\$1.85

NEW YORK MARKETS.

Owing to delay in receipt of our regular market report from New York, the following notes are quoted from "The Daily Mill Stock Reporter" for Tuesday, June 10.

A fairly good demand existed for chemical pulp yesterday and prices were maintained. Importers and dealers reported no pointed call from any source for any specific grade of pulp, but were a unit in asserting that the market was substantially more active than for several months and that the demand was gradually assuming normal proportions.

Quotations f.o.b. pulp mill or ex-dock:

Imported bleached sulphite	\$7.50—\$8.00
Domestic bleached sulphite	5.25—5.75
Imported unbleached sul.	4.00—4.50
Foreign easy bleaching	4.75—5.00
Domestic easy bleaching	4.25—4.50
Sulphite, news grade	3.25—3.50
Domestic soda bleached	4.25—4.50
Mitscherlich unbleached	5.00—5.25
Scandinavian kraft	3.75—4.00
Domestic kraft	3.50—3.75
Screenings, refined	1.25—1.50
Screenings, unrefined . . . . .	.75—1.00

Mechanical pulp was quotably steady yesterday and a moderate transient demand was reported, while mills continued to be kept well engaged in supplying the wants of their contract customers. Eastern grinders quoted around \$26 per ton for spruce of prime quality at the point of shipment, with quotations to western users a shade lower owing to the higher freights involved.

NORTH AMERICAN REORGANIZATION.

At a special meeting of the North American Pulp & Paper Companies in Montreal last Friday, the shareholders approved of the organization of a working company, to be called the Saguenay Pulp & Paper Company, and authorized it to make an issue of \$5,500,000 6 per cent. serial gold bonds for the purpose of purchasing from the N. A. Pulp & Paper Companies and the Chicoutimi Pulp Co., \$1,500,000 first mortgage bonds of the latter company, and \$300,000 similar bonds of the Saguenay Power & Light Company; to purchase from the Saguenay Securities Company, \$1,170,000 first mortgage bonds of the Chicoutimi Pulp Co., and \$1,200,000 of the Saguenay Power Company, to pay the debts of the Chicoutimi Pulp Company and its subsidiaries, and the cost of completing the Pont Arnaud (Port Alfred) plant.

The shareholders also approved the transferring of the preferred shares of the Chicoutimi Co. into a like number of shares of the Saguenay Pulp Company; the reduction of the dividend from 7 to 6 per cent., and an increase in the number of preferred shares to even the disbursement.

The new company elected directors for the next two years as follows: E. C. Pratt, general manager of Molsons Bank; R. F. Hammond, Craig, Beeker & Co., N.Y.; Louis Chable, vice-president American Paper Exports Co., N.Y.; J. T. Steele, Buffalo; Hon. F. L. Bédome, vice-president Banque d'Hochelega; Hon. J. M. Wilson, Hon. N. Garneau, Joseph Quintal, president Chambre de Commerce; and J. E. A. Dubue.

The new company will possess water powers of 200,000 h.p., of which its subsidiaries are now using about 30,000.

MATTAGAMI ISSUE SUBSCRIBED.

The announcement is made by The Royal Securities Corporation that the issue of \$2,000,000 Mattagami Pulp & Paper 7 p.c. convertible debenture stock, offered publicly some ten days ago, has been completely subscribed. The relative ease with which recent pulp and paper offerings have been absorbed would seem to indicate that the investment public are quite alive to the importance of the industry, which ranks as the Dominion's greatest in an export trade way.

The number of issues recently placed, also, indicates

WOOD PULP TRADING CO., Ltd.

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NEW YORK CITY

BRANCH OFFICES:

Buenos Aires, Argentine,
Rio de Janeiro, Brazil.

that the industry itself is preparing to take the fullest advantage of its possibilities for remunerative business outside of Canada. The appointment of a special representative of pulp and paper interests to co-operate with the Canadian Trade Mission in London is further evidence of the enterprise of the Canadian producers.

STRUCK AND UNSTRUCK AT FORT FRANCES.

On Monday of last week at 4 o'clock the pulp and sulphate workers at the paper mill again went on a strike. The men were called out by the Fort Frances Local Union No. 92 because they claim that James Tonge had been discharged without good cause. No notice had been given to the company of this contemplated action so that it came as a great surprise to all the citizens of Fort Frances as well as the officials of the company. Mr. Tonge had been engaged as a machinist and he had been laid off. Upon inquiry from the company's superintendent, it was learned that the company's contention was that there was work for only one machinist since construction had ceased and it was therefore necessary in their opinion to lay off one machinist. They retained the services of a married man and laid off the single man who happened to be Mr. Tonge. It appears that Mr. Tonge is the secretary of the local union and a meeting was convened and the men decided to go out on a strike as their secretary, Mr. Tonge was being discriminated against.

By dint of continual hard work on the part of the mayor and town council and several conferences and meetings of the workers, the company agreed to allow Mr. Tonge to continue at work in some capacity until the president of the union could arrive and arrange for proper arbitration of the case. The strikers resumed work Wednesday evening. Paper makers were of course deprived of work because of the strike.

Article 10 of the agreement recently made between the company and the union provide there shall be no strike or lockout, but that grievances shall be arbitrated if not adjusted by proper complaint and compromise. Mr. Tonge admitted that this clause had not been followed and President Coward of the local admitted that the company had not been notified of the strike. The men claim that the company broke the agreement made last month by changing the working conditions, and refusing to take back certain men who had taken an active part in fighting for the men's rights.

THE NEW SULPHATE PLANT OF CLARKE BROS.

In the new sulphate pulp plant, which will be erected by Clarke Bros., Limited, of Bear River, N.S., the capacity will be thirty tons a day, and it is also proposed to erect a new saw mill of a cutting capacity of 31,000 feet daily, as well as enlarge the ship repair yard and dry dock of the company and double the output of the clothes-pin factory. Clarke Bros., Limited, have an offer of a contract for the sale of their entire product of sulphate pulp to the Ironside Board Corporation manufacture test jute board used in the manufacture of corrugated and fibre shipping cartons.

Clarke Bros., Limited, own in fee simple some 40,000 acres of land containing approximately 400,000 cords of pulpwood and beside these holdings have available an unlimited supply of not less than 10,000,000 cords of wood suitable for the purpose of manufacture at their saw mills, woodworking plants and

sulphate mill. The latter will be erected at Bear River at the crossing of the Dominion Atlantic Railway and the river. The company own their own water power on the Bear River, three miles from the village, capable of developing about 4,000 h.p.

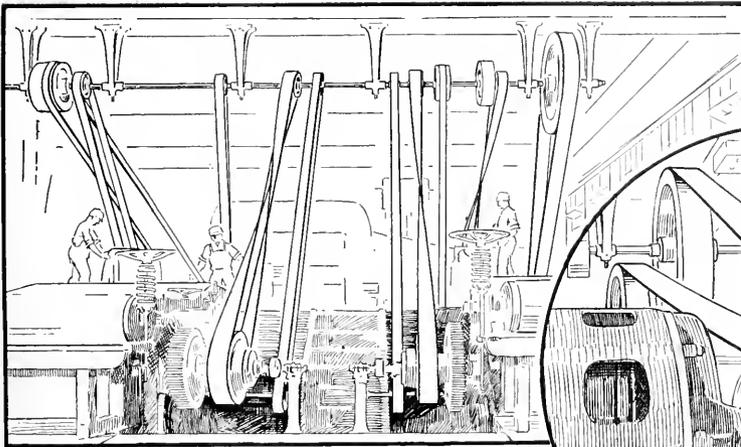
As already announced in the "Pulp and Paper Magazine," A. G. McIntyre will be the president and managing director of the new sulphate pulp plant and associated with him in the construction, building and operation of the mill, will be Joseph G. Mayo President of the Ironside Board Corporation, and formerly general manager of the Mattagami Pulp and Paper Company, Toronto; A. A. MacDiarmid, chief engineer of the Ironsides Board Corporation, who is former manager of manufacturing of the Northcliffe Mills, Newfoundland, and U. S. Government expert for the U. S. Federal Trade Commission on paper price fixation; F. W. Frazer, secretary of the Publishers' Paper Co., and formerly secretary of the Dominion Government Forest Products Laboratories, Montreal; Andrew Block, who is the builder, designer and manager of several of the largest Swedish pulp mills, and Howard Cunningham, recently engineer of the Nova Scotia Steel & Coal Co., who will be resident manager for Clarke Bros. The latter, who have for thirty-five years been well known and successful lumbermen and wood-working manufacturers, recently obtained a federal charter. The authorized capitalization of the company is \$1,000,000 seven per cent. serial bonds, and \$1,500,000 common stock. There is now being offered to the public \$75,000 seven per cent. first mortgage (closed) two to ten year serial gold bonds, at par with accrued interest, carrying a bonus of twenty per cent. common stock of the company.

EARNINGS SHOW SOME FALLING OFF.

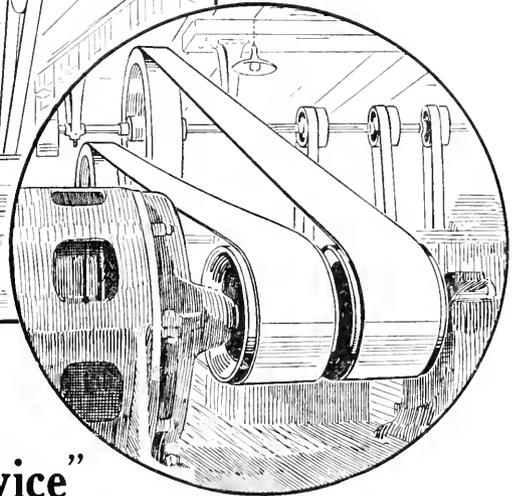
The annual report of the Pacific-Burt Co., Limited, of which S. J. Moore, of Toronto, is president, for the year ending March 31, has been printed and shows that the profits were somewhat lower during the past twelve months than for the previous corresponding period. The profits last year were \$83,743 compared with \$101,551 the year before. The balance brought forward a year ago was \$38,026 compared with \$65,174 the previous year and the amount carried forward this year is \$29,654. Of the total sum at the credit of profit and loss account, \$16,025 was transferred to real estate and plant reserve, \$5,037 reserve for taxes and the usual sum of \$58,500 went in dividends, 7 per cent. on the preferred and 2 per cent. on the common. The sum of \$12,552 was written off for patents. The reserve for real estate and plant now amounts to \$70,000 and the amount written off against patents reduces that account to \$210,000. The changes in assets and liabilities are not large and the outlook for the coming year is regarded as good while, considering that operations during the past twelve months were conducted under war conditions, the showing is regarded as a very favorable one.

NO NEWS FOR SIX DAYS.

Buenos Aires, Tuesday, June 3—(By the Associated Press.—Buenos Aires, a city of more than 1,500,000 inhabitants and with more than thirty daily newspapers, has now been without newspapers or even news bulletins for six days.



The Lincoln Paper Mills, Merriton, Ont., showing the exclusive use of Dominion Friction Surface Belting in Paper Mill (above) and on Motor Drive in Sulphite Plant (right).



“Perfectly Satisfactory Service”

This is the way the Lincoln Paper Mills of Merriton, Ontario, sums up

Dominion Friction Surface Belting

The conviction expressed in this statement is clearly established by the fact that our belting is used exclusively in both the paper mill and sulphite plant of the Lincoln Paper Mills.

The reason is obvious—Dominion Friction Surface Belting is not merely rubberized fabric — it is saturated with our special friction rubber surfacing which makes it take a non-slip grip on pulleys that transmits the total force, of each power unit, that can be transmitted by belting.

It is absolutely uniform and dependable—conserves power and labor—“speeds up” production and is the most economical belt for every transmission purpose.

It is the result of over fifty years of belt-making experience by the oldest and largest rubber organization in Canada.



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- Rubber Covered Belting
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| Ottawa, | Ft. William, | Calgary, |
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| | Vancouver, | Victoria. |



HOW TO MAKE FACTORY ROOF TIMBERS LAST LONGER.

Although there is scant information on the service and cost of treated roof timbers in cotton mills, paper mills, and other buildings where high humidity causes rapid decay, a number of preservative treatments which it will undoubtedly pay to use may be suggested. The following are given in Technical Notes of the Forest Products Laboratories at Madison, Wis.

Preserving Timbers by Steeping Process.

The steeping process consists merely in soaking the timber in a water solution of a preservative such as zinc chloride, sodium fluoride, or mercuric chloride. The wood must be thoroughly seasoned. It is left in the solution one day for each inch in thickness and one additional day. After treatment, the timber should be air dried before using. Specific directions for the use of this process and they are especially necessary for handling mercuric chloride, may be secured from the Forest Products Laboratory, Madison, Wisconsin. Zinc chloride attacks lead paints, but is very desirable otherwise. Mercuric chloride is very effective, but is poisonous and has a decided corrosive action on steel, so that steel tanks cannot be used with it. Sodium fluoride does not attack paint, is not corrosive, and in most other respects is very desirable.

Non-Pressure Creosote Treatments.

Timbers may be coated with coal tar creosote by a brush treatment, by dipping in hot oil for 5 to 15 minutes, or the hot and cold bath method. This last method consists of submerging the lumber in hot oil for several hours, and then either allowing the oil to cool down slowly with the wood in it, or plunging the wood into cool oil and leaving it for several hours.

Coal tar creosote is objected to by some insurance companies as a fire hazard, but whether or not it really does add greatly to the inflammability of wood is a debatable question. The odor of creosote may be objectionable in food storage rooms, but is not usually displeasing to workmen. Creosoted wood cannot be painted over successfully because the oil quickly comes through the paint and discolors it.

Pressure Treatment.

Although pressure treatments are the most expensive, they are the most effective because they result in the greatest absorption and penetration of preservative. Roof planking should receive 8 to 12 pounds of creosote per cubic foot, or $\frac{1}{2}$ pound of the salt if zinc chloride is used. Such treatment should add at least twenty years to the life of roof plank.

Effectiveness of Treatment.

The effectiveness of treating timber depends upon maintaining a complete envelope of treated wood around the untreated interior of the piece. If this treated layer is broken through decay can enter and destroy the untreated interior in spite of the treated outer layer. For this reason lumber should be cut to final dimensions before treatment. Whenever it becomes necessary to cut into treated timber the untreated wood exposed by cutting should be given two brush coats of creosote or some other preservative.

The addresses of wood treating companies adjacent to any given locality may be obtained from the Secretary of the American Wood Preservers' Association, Mt. Royal Station, Baltimore, Md., or from the Forest Products Laboratory.

BELGIAN PAPER INDUSTRY.

In a report on the present position of the Belgian paper manufacture, the Norwegian Consul-General at Antwerp states that the industry has suffered from the war relatively much less than other trades.

Several factories were certainly robbed of their machinery, driving belting, copper, etc., but new material will presumably soon be obtained with the help of the United States. The large paper factory near Duffel was destroyed in the early months of the war, but it has meanwhile been rebuilt. Several factories have been able to work during the war, though only irregularly, and have for the most part produced paper for general use.

The Belgian government has lately instituted a commission which is now engaged in regulating everything required for putting all the factories in working order and obtaining the necessary raw materials. The manufacturers may make their purchases independently, but the bulk of the goods bought are subject to the control of the commission, which will act in co-operation with the other allied countries. It is thought that these transitional provisions will last only a few months. Standard Daily Trade Service.

EFFECT OF MOISTURE ON THE STRENGTH OF PAPER.

When paper is bought and sold under strength specifications uniform and accurate results cannot be obtained unless the atmospheric humidity under which the tests are to be made is specified.

Many experiments were performed at the U. S. Forest Products Laboratory at Madison, Wisconsin, on various weights of 13 different papers made on ground wood-sulphite, all sulphite and kraft furnishes. The tests were conducted in a constant humidity room after proper seasoning of the paper, for which $2\frac{1}{2}$ hours are usually sufficient. Tests were made at 41, 53, 64, 65, 77 and 82 per cent. humidity, at approximately 70° F. The Laboratory's standard test condition is 65 per cent. humidity at 70° F.

The results of the tests are as follows:

1. The bursting strength increases with decrease in humidity. Total variations in strength of from 21.5 to 30.0 per cent. were obtained at varying humidities compared with the standard strength.

2. The breaking length, as tested by the Schopper machine, both across and with the machine direction decreases with increase in humidity. The papers tested showed a variation in breaking length of from 25.7 to 37 per cent. from the standard strength.

3. The stretch of the papers both with and across the machine direction increases with increase in humidity.

4. The folding property of the paper is affected to greater degree by variations in moisture content than any of the other properties. For example, a commercial 60 lb. kraft paper at 44 per cent. humidity withstood 968 double folds and at 82 per cent. humidity showed a folding test of 6660 double folds. Some papers reached their maximum folding strength below 82 per cent. humidity, showing that too high a moisture content may make paper too limber for maximum folding resistance.—U. S. Forest Products Laboratory "Technical Notes."

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SEVERAL NEW CONCERNS ORGANIZED.

Many new companies in the paper, publishing and printing line have been organized during the past few days.

The World of Books, Limited, is the name of a new organization, which has been granted a provincial charter with headquarters in Toronto, and a capital stock of \$40,000. The purpose and object of the enterprise is to carry on the business of printers, book-sellers, bookbinders, stationers, lithographers, engravers, paper and ink manufacturers, designers, publishers, etc., and to conduct business as proprietors and publishers of magazines, journals, newspapers, books and other literary works and undertakings, and especially to take over the publication known as "The World of Books." The gentlemen behind the concern are all well known book publishers of Toronto in the persons of Thomas Allen, Frederick D. Goodehill, Samuel B. Gundy, John McClelland, George J. McLeod, Frank Wise, Henry Brophy and Ernest W. Walker.

A charter has been granted to the Sudbury News, Limited, with head offices in Sudbury, Ont., and a capital stock of \$20,000, to carry on the business of publishing, printing, bookselling and to issue newspapers, etc.

Smith & Stone, Limited, with a share capital of \$100,000, and chief place of business in Toronto, is a new company, with wide powers, including the right to manufacture, buy, sell and deal in paper, pulp, lumber, etc.

London Shipping Containers, Limited, with a capital stock of \$50,000, and head offices in London, Ont., have been granted a charter to make, sell and deal in paper, cardboard, wooden and metal containers, boxes, barrels, pails and bags of all kinds, and to manufacture and deal in paper, cardboard and other material. Among the incorporators are Thomas H. Lacey, George W. Stephenson, and William J. Reid, manufacturers, of London.

Crane, Newton and Selby, Limited, Toronto, with a share capital of \$40,000, have been granted letters patent to carry on a printing, engraving, lithographing, paper making, and advertising business. The men behind the new enterprise are William A. Newall, John P. Selby, Walter T. Crane and Jacob Bolander, all of Toronto.

The Snyderfiba Barrel & Box Co., Ltd., with a capital stock of \$200,000, and chief offices in Montreal, have been incorporated. Wide powers are conferred, and among them are to maintain and operate pulp and paper mills or any by-products thereof; and to purchase and operate lumber and saw mills; and to manufacture and deal in timber, lumber, wood, etc. Among the incorporators are William Taylor, Fred W. Tofield, and Bruce S. Crombie, Montreal. Another concern granted a charter is the Canadian Snyderfiba Container Co., with a capital stock of \$100,000. Headquarters are in Montreal, and the powers of the company are similar to those of the Snyderfiba Barrel & Box Co. The personnel of the incorporators is also largely the same.

A workman in the groundwood mill of a Canadian plant who punched his card for three days without going to work was brought up before the J. P. and fined \$32.25 for obtaining money under false pretenses.

LATE PULP AND PAPER NEWS.

B. H. McCreath, for many years on the business staff of the Toronto Star, has bought the Goderich Star from Van Atter and Naftel, and will add considerably to the plant, which will be removed to new quarters. Mr. McCreath has also been promoting a fifteen million dollar steel plant for Goderich.

All the paper mills along the route of the old Welland Canal, which have been closed down for the past two weeks while the water was let out of the canal, have resumed operations. Advantage was taken of the occasion of non-operation to give the equipment of each plant a thorough inspection and carry out several necessary repairs and improvements.

Sir Charles B. Gordon, of Montreal, who is a director of the Provincial Paper Mills Co., Toronto, has been elected a member of the Board of Directors of the Canadian Consolidated Rubber Company, Montreal.

Ritchie and Ramsay, coated paper manufacturers, Toronto, have inaugurated a plan by which all employees of the company, who have been in the service five years or over, will be given a two weeks' annual holiday with pay, and those who have been engaged over one year and up to five will receive a week's holiday with pay. The company are operating their plant during the summer months of June, July and August for five days a week, the employees being allowed each Saturday off, and receiving the same rate of wages for a five day week as they formerly did for six. This generous action on the part of the firm was voluntary, and is one that is much appreciated by the staff at the mill.

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TAXATION OF TIMBER IS UNWISE.

Ottawa, May 30—Recent programs on new taxes issued by powerful Canadian organizations, particularly the Western Farmers, contain clauses urging imposition of taxes on all natural resources including timber. The various governments of Canada now collect about \$8,000,000 a year on the timber lands under lease to operators, and a sum vastly in excess of the foregoing is collected from wood-using industries. Quebec's plan is to auction off the right to cut timber on public lands and this has recently brought the public treasury as high as \$1,000 a square mile of forest. In addition the holder must pay a ground rent of \$5 a square mile, and fire taxes. Should fire devastate his lands, he loses, of course, the heavy original investment and all annual payments. Under these circumstances, the campaign to load new taxation on timber limits is rightly meeting with organized opposition. World-wide experience in the handling of forests has shown that every incentive must be provided to encourage the holding of timber lands over long periods of time. Heavy taxation, as the United States has learned, forces the owner to cut his lands bare in order to extract the maximum value and then throw the lands back upon the government as barrens. The public interest, as Dominion forestry officials have repeatedly urged, lies in a continuous production of timber rather than the stripping of mature and immature growth. A plan now being worked out for reasonable timber taxation on lands privately owned allows the municipality a small annual tax and provides for a division of profits when the timber crop is mature enough to cut. This refers to only a very small percentage of Canadian timber hold-

ings which are nearly all on so-called 'Crown Lands,' owned by the governments. The government forests are now bringing in public revenues as high as \$1,800,000 a year in the case of Quebec and \$2,000,000 for British Columbia.

JOST COMPANY HANDLE PULPWOOD.

The business of the Jost Company, Limited, was started by P. M. Jost, in 1917, with the object of establishing a purely brokerage and commission business in pulpwood, enabling producers, dealers and jobbers to find a ready market for their wood at a nominal cost without entering into direct negotiations with mills or being troubled with details of freight rates and other questions which arise in connection with direct contracts with consumers. Later the business was formed into a partnership with A. E. Wever and later in March, 1919, formed into a limited company under the present title with the introduction of further financial interests.

The present directors of the company are: P. M. Jost, president; A. E. Wever, vice-president; J. Gregory Smith, of St. Albans, director; D. H. Loynachan, secretary.

While the company may extend its operations and become producers, it is their intention further to extend their brokerage business and offers an unique service to pulp and paper mills, whereby they can negotiate purchases and complete contracts for their full requirements of wood, thus relieving their purchasing department of any worry as to their supply of pulpwood. The company is in a position to handle all such shipments between the shipping point and destination in a satisfactory manner.

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Pulp and Paper Magazine

OF CANADA

A Weekly Magazine devoted to the Science and Practice of the Pulp and Paper Manufacturing Industry with an Up-to-date Review of Conditions in the Allied Trades

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EDITORIAL

SHOULD RESEARCH BE CENTRALIZED?

One of the biggest problems at present facing the scientific men of Canada is the question of whether there should be a central national Bureau of Research. It is quite generally accepted that a bureau of standards and testing can very well be a central institution but when it comes to matters of research there appear to be wide differences of opinion. This is especially noticeable in regard to provisions for industrial research. On the one hand there are those who are for the centralized bureau because of the advantages in the matter of equipment and trained specialists in certain phases of the work and in the handling of some of the more intricate instruments and processes and the esprit de corps and concentration of knowledge which would be available through conference and discussion at practically any time, as well as very considerable saving by the elimination of duplicate equipment and a multiplication of buildings. On the other hand we find many who have given deep thought to the subject and are in direct opposition to the centralized bureau idea. These would prefer to have the Government subsidize the university and private laboratory, to furnish them with the necessary equipment and other assistance and argue particularly that industrial and research work should be carried out in close proximity to the important centres of the industry involved. They also argue for the advantage to the coming generation of researchers in having an opportunity at their doors for undertaking scientific studies of direct interest to local activities.

There is much to commend this line of reasoning and as far as purely industrial research is concerned there is comparatively little to be said against it, especially as the debators on that side of the question seem to have in mind the pursuit of investigations on particular phases of industrial problems which affect individual communities or concerns. In the latter case the plan of the Mellon Institute at Pittsburg is strongly favored, whereby the firm interested contributes to the conduct of an appropriate research in a convenient university laboratory. It is further argued that by such government or private subsidies to universities the ablest professors will be able to remain as teachers of the coming generations of investigators, which is their right and proper place in the educational world. In support of their views our friends remark on the necessity for having research carried on at the point of production of raw materials because of the difficulty of transporting them in their

original state to a central institute. The matter of the utilization of fish waste is an instance in point and there are doubtless others where even a day in transit would cause, or might cause, a considerable change in the character of the material. This would doubtless apply to numerous other products while there are many that would not be affected at all.

As far as the inspiration to the student is concerned we feel that the presence of a central bureau need not interfere in the least with a man in the university of British Columbia studying the percentage of cellulose in Douglas Fir or the bleaching properties of pulp made from Western Cedar, neither would it interfere with the student at Halifax from investigating a method for extracting oil from cod-fish livers. To our mind these people who argue against a central bureau of research are both right and wrong. They are right in asking for better support of our universities and for greater opportunities for students to investigate problems of local interest and importance, but we feel that they overlook the necessity for research in regard to certain fundamental properties of our raw materials or intermediate products that would not naturally be undertaken by either the private laboratory or the university staff. Another point to remember is that the work of a private laboratory or a privately endowed University is private property and fundamental research for the benefit of the general knowledge of the public is not so undertaken, while it would be in either a central federal bureau or a government supported university research. It seems as though either of these offers about an equal chance for political patronage unless better guarded than most public affairs. We have already pointed out in these columns that the university professor for the most part is so overloaded with teaching duties that it is difficult for him to plan and carry out a consecutive line of investigation, notwithstanding the many brilliant ones that have been performed by university men, who have been almost entirely responsible for the progress that has so far been made. It remains, however, that there is still much work of a fundamental nature to be done and we believe that a central bureau could and would do a great deal of investigation that would be of primary importance to our Canadian industries. In fact, we believe that such a bureau should undertake the work that would really form a basis for the further investigation and industrial application that can be undertaken by the universities or the private laboratory. Results of Government work, whether done in a

central bureau, in departmental laboratories or in subsidized universities, can be taken as starting points or leads to be followed by those industries which can best follow them up into commercial developments, but we feel, if all our effort were concentrated on the purely industrial problems, as some seem to favor, that many important phases of fundamental research would be entirely neglected and that the purely industrial man would soon find himself in the position of the farmer down in Maine who was shingling his barn during such a dense fog that when the sun came out he found he had shingled several feet beyond the edge of the roof.

The editor would be glad to have the opinions of others on this problem, which is really one of vital importance to the future of our industries. It might well form the basis of a discussion for the next meeting of the Technical Section.

A BRITISH TECHNICAL ASSOCIATION.

One of the interesting events of the last few months is the revival in England of a movement for a British Technical Association. The pulp and paper men in the Old Country, and when we speak of pulp and paper men it is limited practically to the manufacturers of paper, have looked with more or less wonder on the rapid development of the industry on this side of the Atlantic. Those who have looked carefully into the matter conclude that one of the factors which is rapidly making itself felt in the growth and standing of the industry is the work of the technical men. In England the idea seems to be rather prevalent that the technical man in the paper industry is the chemist and suggestions for the formation of a technical association have for the most part involved the consideration of a society of paper mill chemists. At least this is the conclusion that one arrives at in reading the British trade journals.

A few months ago Sindall & Bacon, one of the best known firms of industrial chemists in the Old Country, proposed that a meeting be arranged for this fall at which such an association could be actually organized. In the meantime they very generously offer to undertake a large part of the work of making necessary arrangements. Sindall & Bacon propose to include chemists, engineers and mill managers who are directly concerned with the industry and persons qualified by reason of occupation or business interests dependent upon paper, etc., as eligible to membership. In a letter to the *World's Paper Trade Review* they outline the scope of the association's work. This is largely along the lines already being followed successfully by our American and Canadian technical organizations.

One of the very interesting suggestions made by Sindall & Bacon, and one which there may be some chance of adopting on this continent a little later, is that the proposed association issue a certificate on

satisfactory examination by way of encouraging the scientific education of junior chemists and engineers. This is going a little farther than the American and Canadian technical men have as yet considered desirable, but it is a step which may eventually be necessary to establish the status of young men in the industry who wish to make a special study of pulp and paper manufacture. We believe that in time such a suggestion might develop into the revival of a modernized and improved system that would be a satisfactory substitute for the apprenticeship system which at present has no counterpart in the training of pulp and paper makers.

We feel that the organization of such an association in Great Britain would be an excellent thing for the Canadian industry as well as that of England. There is a wealth of experience tied up in the lives of men on the other side for which there has been no outlet in the form of an open discussion of questions of interest such as invariably follows the presentation of a paper at one of our Technical Section meetings. In addition to this discussion of matters of technical, and perhaps in some cases only local interest, there would be the great advantage of having a mouth-piece to the best technical practice and knowledge in England which would greatly facilitate the establishment of standards for our industry. Such matters as methods of determining moisture in pulp would naturally come up for consideration and committees of the British, American and Canadian societies working on the same problem could without doubt arrive at a satisfactory solution to practically any question that might arise.

It is not known to us and may not be known to the promoters of the idea how many technical men there are available in Great Britain for such a society, but there must certainly be enough to form a nucleus for an organization of this kind. A degree of success which might reasonably be expected will depend not only on the initiative of a few enthusiastic men like Sindall & Bacon, but will rest very largely on the attitude of the concerns by whom the members are employed. If they take a generous view of the matter and not only encourage their chemists and engineers to join and attend meetings of the association, but also permit the publication of data and the discussion of mill problems at the meetings the whole industry will obtain a very great benefit from such a society.

It would be a great pleasure to the Technical Section to have some of our Old Country friends attend the summer meeting and see how the work is carried on over here. They might get some first hand ideas that would be of assistance.

Owing to the industrial unrest it has been decided that the annual meeting of the Canadian Paper Trade Association, which was to have been held in Montreal on June 24 and 25, will not take place until September next.

Importance of Quality—and How to Get It

By L. H. SHIPMAN,
Spanish River Pulp and Paper Mills.

The editor had something to say about the quality of Canadian pulp and paper in a recent issue. Mr. Shipman's article was written before that but not read until after. The Spanish River News has given permission to reprint it. Nothing better could happen the industry in Canada than to have every mill go at this problem of quality in some such manner as is mentioned here. Every boost in quality adds to Canada's reputation. Every defective shipment, except when so understood and expected, hurts the whole industry.

Considerable space is being given in the newspapers, trade journals, etc., these days regarding the keen European competition which manufacturers on the American continent in all lines of trade are going to be compelled to meet very soon, now that the war seems to be about over and peace is soon to be declared. Many and varied are the suggestions which are being offered from all quarters as cure-alls for our present difficulties and to help our industries get on such a running basis that they can compete successfully with our European brothers as regards financial return to the capital invested; and satisfactory working conditions and money return to the men engaged in actually doing the work of operation of these industries.

This whole question is a pretty broad and complex affair, some of its phases being of peculiar interest to our company, while others are more remote as far as our company family is concerned.

There is one phase of it, however, which is of close personal interest to everyone of us who is engaged in making his livelihood from his efforts in newsprint manufacture. This phase can be well summed up in the term **Quality of Product.**

We will not have to wait for the Peace Conference to decide whether the Monroe Doctrine is specifically mentioned in the new constitution of the proposed League of Nations before we bump against a real competition in the newsprint business. Nor will we, as members of the Spanish River organization, have to wait for that European competition to get passage on the limited ocean cargo space from Europe to America. And when I say America I mean the Western hemisphere.

We are going to know the competition of our own land with a big C and know it because it will have bruised us if we are not careful. We have seen the sulphite shipments of Canadian mills cut in two since the signing of the armistice. This means that only mills making the very best quality can keep all their digesters running to-day and each unit of digester space turning over in the same length of time as during the six months previous to the armistice. Many sulphite mills during the last eight weeks have looked upon cold empty digesters and accumulations of dust on the stilled press rolls of wet machines.

Furthermore, ask the Sales Department of any newsprint company on our continent to-day to show you his complaint file. Compare the number of letters of this nature received during the past three months. Then sit down and ponder. Get out behind the barn in the bright spring sun and whittle a stick and think.

Think over what this hesitancy on the part of sulphite buyers, these ever increasing complaints from newsprint buyers, mean.

You won't be long in reaching a conclusion and that conclusion will be about as follows: We have got to get out and hustle and make our sulphite right, make our ground-wood right, make our newsprint right, if we are going to continue to hold our jobs and have plenty of work six days a week.

It is all wrong to sit back and say that we've heard this all before; that this is nothing new; that it's an old story; that ever since the days of old Mitscherlich there have been complaints and that in all probability, as long as there is sulphite and paper made they will continue.

These objections to waking up and getting on the band wagon are all right as far as they go, but they don't go far. They're short sighted.

It is true that there have been complaints for years in the newsprint business and that more or less attention has been paid to them by the manufacturers and we, or some of us, are still running more or less successfully. A close study of the development of the business in past years will show, too, that a great many of the improvements in our manufacturing processes have been due to the intelligent attention given to these complaints and to efforts made to eradicate their causes.

But the thing which should not be lost sight of just now by those who counsel the belittling of the menace of the gathering cloud of competition is the fact that the situation is not like past ones, of passing moment only. We have listened to complaints before, we have made bland promises, we have done much or little as the occasion seemed to demand, and we have got by. **CAN WE DO THAT NOW?**

These things, market conditions, competition, etc., run in waves or periods. Complaints are many and then few. The product has to be good or we can slack off a bit and get by. This is happening right along every few months. Ask any man though, whose business it is to study price of stock movements and he will tell you that stocks never move readily up nor steadily down. If a stock is on the rise, it moves up a bit, then recedes a lesser bit; then it moves up some more, then recedes a little. But each upward movement will be greater than the following receding one.

The Years Just Past.

Thus, while over a period of time there are many minor fluctuations, the general effect is one of a large wave, or period. And to-day we are at the bottom of one of the biggest waves in the newsprint competition game that any of us alive have known. Our complaints, which we have paid more or less attention to as they appeared as little notches in the downward trend of the curve, gradually grew less and less as the war wore on until last fall before the armistice was signed it became a question only of getting the paper to the publishers. Anything went. The cry was paper, more paper, never mind the quality only get us the paper. And we got it to them. That's all history. We got it and while we did not forget entirely the quality, still that was subordinate.

It had to be so, otherwise the public would have had no newspapers to read. No newsprint man should be severely criticized because he made poor newsprint during 1917 and 1918. It is a wonder he was able to turn out paper which was printable during that period. Because of freight embargoes, influenza, unskilled and insufficient help, the newsprint man has experienced in his mills a taste, yes, a stomach full, of a certain section of hell let loose. It can be described adequately in no other way. And so it is no wonder that the quality deteriorated.

The Present is Different.

We have got to the bottom of the hill, we have had our big rest on competition and are now starting on another big hill; the biggest one in our newsprint lives. To the victor belong the spoils.

This should be sufficient answer to the man who says, "We've heard complaints before and have kept running and we'll probably hear them again, and very likely keep running." But just remember, we've never yet in our newsprint history climbed such a hill of competition as we are starting up now.

How to Meet the Situation.

Very well then, what about it? What shall we do? How shall we emphasize **Quality of Product** if that is the solution to our problem? The answer in general terms is:

1st. By intelligently studying and finding out just what we are doing and how we are doing it.

2nd. By applying intelligence to the bettering of conditions which we find wrong through our studying.

The method usually employed in most pulp and paper mills to keep track of the quality of product manufactured is to keep no regular systematic record of quality factors at all. When a particularly emphatic kick arrives, immediately there is a great hurrying and scurrying to and fro of Manager, Superintendent, Department Heads, Chemist, Engineer, and any one who may be supposed to be able to throw some light on the trouble. As a rule, if there are six men engaged in the investigation, there are six different opinions as to the cause of the trouble. A great stir-up and hullabaloo ensues, and when the smoke clears away the manager makes a guess as to which opinion is the right one, writes his sales force that the trouble is discovered and remedied, tells his superintendent and department heads to do this and so, and immediately forgets the matter. No record is kept of the happening, the real trouble may or may not have been found, in fact it may really have been only a bluff on the part of the newsprint buyer or it may have been in his own printing plant and blamed on the manufacturer. The deplorable part of the whole thing is that there is no real record kept, and the terms used are vague and indefinite. Nobody really knows just what is happening, consequently no really intelligent effort is made to keep the product up to a certain definitely understood standard. Perhaps I am over-drawing this picture, but I want to drive the point home.

The main essentials of the above outlined situation are happening in paper plants right along on matters pertaining to inter-departmental affairs. And a great deal of the hullabaloo at trouble times could be avoided if only definite standards were set and accurate records kept of how close the plant comes to reaching those standards.

All this is not because of any inherent dishonesty on the part of the newsprint manufacturer. He is merely

the victims of circumstances. He wants to deliver a good product, one which will be satisfactory to his customer but custom has been not to talk about quality of product in any terms of measurable dimensions. So long as he can't describe to people and have each of those three understand the same thing, what incentive is there to effect and maintain definite inter-departmental quality records? There has been no such incentive. But one is on the way. We have already sensed it and have begun to act accordingly.

We have already started along these lines but can go a long way yet before we should begin to do any prophesying about it. Incidentally we have just been through the throes of a general mill "clean-up." We have tried to eliminate the accumulations of dirt and scrap material which were the products of working under war conditions. While we are priding ourselves on the good tidy appearance of our plants we must not forget that they won't stay so unless every last one of us keeps his subject in mind. We must remember that **Quality of Product and Cleanliness of Plant** go hand in hand.

We must keep our eyes open for dirt and consider every bit of it or every condition which we find in the plant which could in any way cause dirt to collect—I say we must consider it in the same category as we would Bill Hohenzollern or the devil himself and treat it accordingly.

If our present effort is going to have permanent results looking towards meeting the coming competition then we have got to keep our quality of product right and in order to do this we have got to be able to define that quality in understandable terms and to keep a record of it from day to day in order to know, when trouble arises, just what has happened and not have to guess about it.

A Couple of Examples.

Perhaps a couple of examples will suffice to show still more clearly what is meant.

The paper, say, goes off in quality. Anybody at all conversant with newsprint can take a sheet and in a moment declare it to be a good or poor one. The usual procedure is to hold it up to the light and glance through it and declare its formation not close enough. Then one feels of it and says its finish is poor. Perhaps a Mullen test is made and the strength found to be low. The machine tender says the blankety groundwood man is sending him too free groundwood.

All right. "How free do you want it?" says the groundwood man. "The same as you had it last week," says the machine tender.

The all wise providence which directs this vale of tears is the only one in possession of this information. All the groundwood man knows is that last week he was not getting any complaints from the machine room and so he tries to remember how the stock looked to him in his colored glass last week and adjusts grinding conditions until the stock looks in the glass like he remembers it did last week. Perhaps he hits it and perhaps not. In his anxiety to get away from the free side he will probably get it too slow.

Now in any mill which wants to cut its troubles down as low as is possible, in a business like ours, whose middle name is trouble, the paper man should have been able to say to the groundwood man, "Here, I'm getting a bum sheet because your groundwood is too free. To day's test shows it to be running around 180 while last week everything was fine when the groundwood was 140." Then the man in the groundwood

has something definite to go on. And having that definite figure in mind he is much more apt to keep the groundwood at that definite quality.

We have already done this. We have been keeping for some time past a definite record, in understandable terms, in actual figures, of just what our groundwood quality is from day to day. To be sure, this record does not inform anybody how to make good groundwood. That is the province of the groundwood man. The record allows the papermaker and the groundwood man to get together and to understand each other; it allows the groundwood man to know what the papermaker wants and so the groundwood man doesn't have to guess any longer as to what kind of stuff he is supposed to furnish. Incidentally when he gets blankety-blanked by the machine room for poor groundwood which he has not furnished, the record backs up his statement that his product has been O. K.

This illustrates the general principle for which I am contending and everybody seems to be agreed that this groundwood freeness test and record is a thing of real value.

Another example in the paper end. Our sales force goes out to get a contract from a publisher and they tell him we are going to furnish him with No. 1 newsprint. And they shoot off a lot of heated atmosphere about its going to be a well formed sheet, of good finish, better than any we have ever furnished, etc. They get the contract and all goes well for a time. Six months later the publisher gets hold of a sample of paper from some competitor which he thinks is better than we are furnishing. Perhaps it is, perhaps not. Anyhow, he complains about our sheet. Its finish is rotten, he says, just like a piece of wrapper; it is not well formed, is very wild, just like a snow storm, and consequently breaks in his presses, and so on until the sales force begins to see red and send telegrams.

Then we at the mill get the wise bunch together and hold one of our periodic consultations. The natural thing in most any business but papermaking would be to look over the records of the previous six months and see whether our finish had deteriorated and if so, how much. Also to see how the formation had been running lately. But no, we are paper manufacturers. We don't keep quality records in this business. Our grand-daddy didn't and what was good enough for him is good enough for us.

We just scurry round like an old hen with chickens when a hawk is in the sky, bump into each other, swear, and when we are tired of doing this, we attempt to look wise and decide that the sheet is as well formed as it ever was or else we instruct the superintendent to go out and give the machine tender hell and let it go at that. "Yeah, that's us all over, Mable!"

But We Can't Continue on so Any Longer.

There's a seat waiting on the wagon for us and if we're wise we'll occupy it. Otherwise some of us will wish before the year is up that we could work six days a week instead of four.

And it's all very simple after all. While it's a new tale in the newsprint business it's an old story in other lines.

Our sales force shouldn't be allowed to sell No. 1 newsprint without knowing what No. 1 newsprint is. We looked over sixteen samples of competitor's paper the other day, all of which were supposed to be No. 1 newsprint, and found fourteen different kinds of cleanliness, eight different formations, four different finishes, six with basic weight over thirty three pounds, seven with basic weight under thirty one pounds, and

sixteen different Mullen tests. Yet they were all No. 1 newsprint. Now, it's farcical to sell a graded product and be unable to specify the details of the grade, yet we have attempted to do so.

If a customer complains to us that our paper is dirty, we want to be prepared to know whether he is right or wrong and to know, if it should prove he were right, how long our paper has been running dirty and how dirty it is.

When we are making colored paper again, that is white newsprint, we want to be able to know each day whether the color is right and if not, how much it is off color, and to have on tap at any time records of last week's color, the week before, and so on.

And similarly in all our departments. We must know what we are doing and how we are doing it.

Only in this way can we hope to keep our quality such that Spanish River newsprint will be considered as a standard in the trade and further it will only be by each of us holding this ideal constantly in mind that we will be able to meet the vigorous competition which is soon due.

SPLENDID FOREST RESERVE OF ALBERTA.

By HON. CHARLES STEWART,

Premier of Alberta.

The Province of Alberta has 16,711,000 acres of timber lands under Forest Reserve. This comprises about 14 per cent. of the total area of the province. With reasonable protection from fires, the supply of timber products is assured for all time. Most of the land under Forest Reserve is not well adapted for agriculture. It is, therefore, the policy of the Government to preserve the existing species and propagate new types in order to supply adequately the needs of the people for home consumption, and export for the future. Moreover, the Reserves are generally situated near the sources of the rivers and streams of the Province, and thereby ensure the natural regulation and conservation of the water supply and water power.

The estimated stand of the timber as far as surveyed in the existing Reserves, reaches the enormous estimate of 21,000,000,000 board feet. For the last year in which figures are available (namely the fiscal year ending March 31st, 1918), the annual production was as follows:

	Ft. B.M.
Lumber	67,024,000
Lath	3,488,400
Railway ties	50,955
Shingles	1,276,250
Piling props	2,197,000

Besides these products, great numbers of fence posts, telephone and telegraph poles, and fence rails are cut each year. The cutting of timber of Forest Reserves is strictly regulated by the Government under license. At the present time, there are 2,030 square miles of timber lands under license, for which the licensees pay a revenue to the Government for the privilege of taking timber.

A system of permits to settlers and homesteaders is in vogue, whereby they may secure timber supplies for fencing and building, and during the last fiscal year, over 11,613,000 feet B.M. of logs and lumber, have been cut by the homesteaders for improvements on their homesteads. This is a very important consideration to the new settler in Alberta. Timber for building and fencing is generally close at hand in the northern half of the province, at very little cost for these necessary improvements.

T. A. P. P. I. Meeting a Great Success

The T. A. P. P. I. attention was unkindly drawn by the speakers to the first three letters), enjoyed itself from June 11th to the 14th, with the buoyant exhilaration characteristic of that body.

On the 11th, the meetings opened at Erie, with the Hammermill people as hosts; those had the co-operation of the General Electric Company. Visits were made in the morning to the plant of the General Electric Company, who later entertained the delegates at lunch in the Company's well-equipped restaurant. The Hammermill plant was given a pretty thorough look-through by as interested a lot of guests as may be given the run of a plant. The banquet in the evening at the Hotel Lawrence was characterized by good fellowship. Chairman Hatch acknowledged in a graceful way the hospitality of the entertaining companies, and introduced Mr. N. W. Wilson, of the Hammermill Company, who replied on behalf of the company.

The party proceeded thence to Buffalo, which city seems very popular just now. For some unaccountable reason, the Waterworks Association was convened there. Rooms were at a premium, and we know of a Canadian delegate who slept in grandeur in the colonial banquet room in one hotel. (Note the member).

On the 12th, at nine a. m., well on time, special trolleys carried the party to the plant of the Larkin Company, hosts for the day. The morning sessions were held in the auditorium of the Company, with Raymond S. Hatch in the chair. Reports of committees were largely reports of progress, as this was not the annual meeting. In connection with the educational work, Mr. George Carruthers addressed the meeting, outlining a practical method of giving a correspondence course in the paper industry, based on the text-books to be published. Doctor Otto Kress, of the Forest Products Laboratory at Madison, Wisconsin, gave an interesting paper on "The Utilization of Cotton Linters for Paper Making." Large quantities are available annually, and require less soda and bleach than woods. After a jolly buffet lunch and movies provided by the Company, a trip through their extensive plant was enjoyed.

The afternoon session was interesting and varied. A record was made in procedure in that all the papers on the program were read, and the meeting adjourned four minutes ahead of the schedule, with all business completed. These included:

"A New Testing Oven for Wood Pulp," by F. M. Williams.

"Alcohol from Sulphite Waste Liquor," by Professor Ralph H. McKee.

"The Destruction of Wood and Pulp in Storage by Fungi and Bacteria," by Professor S. F. Acree.

"Paper Colors from the Manufacturers' Standpoint," by Doctor W. H. Watkins.

The complimentary banquet in the evening will be long remembered. Mr. Hatch called upon Mr. Stadler to speak as representing the Canadian Technical Section. He voiced appreciation of our generous entertainment by the local committee, and going into more serious matters, advised all in the industry to study the wishes of customers in the newer foreign markets for paper mills of United States and

Canada. Mr. Weirs, of the Larkin Company acting as Toastmaster, called on Mr. Botsford, of the Buffalo Board of Trade, "Lawyer-Poet Speaker," who made a most interesting, witty and timely appeal for every one to be governed by commonsense in their actions and statements with relation to present conditions of unrest. Music was in the hands of Mr. Sissons, of Watertown. Some thought it was too much in his hands at times, but that was pure jealousy. Miss Ruth Cummings, a young lady of Buffalo, added very largely to the evening's enjoyment by her art and personal charm in several solos. Popular refrains were participated in under the graceful lead given by Miss Cummings, supported by the Watertown Romeo.

Friday two excursions were organized: one to visit Buffalo industries, and the other to visit Niagara Falls, and industries there. We took in the former, and enjoyed visits to Niagara Lithographing Company, Pratt and Lambert Varnish Company, and the Pierce-Arrow Automobile plant.

The Niagara Falls trip included visits to the Ahlson Graphite Co., Cliff Paper Co., Defiance Paper Co., and Niagara Wall Paper Co., Pettibone-Cataract Paper Co., Hydraulic Power Co.

Saturday morning, at 8:30, two special trolleys took the party to Niagara Falls, where we were met by T. N. and St. C. cars, and the Canadian entertainment committee. At Thorold the streets and shop fronts were decked with flags, and banners were strung, reading, "Canada Welcomes You," "Thorold an Ocean Port," etc. There the visitors were placed in forty automobiles, each bearing a large banner, "Canada Welcomes T. A. P. P. I." After visiting the plants of the Beaver Board Company, the Ontario Paper Company, Foley-Rieger Company and Provincial Paper Mills, lunch was served in Grenville Hall. About 300 sat down to an abundant meal, with flowers, flags, music and "two-and-a-half."

The menu was attractively prepared on mottled paper and contained, besides the list of "eats," interesting data on the new Welland Ship Canal—Canada's Panama, a list of the peninsula mills, with their products, and the committee. According to the menu, as we recollect it, the guests ate "Welland" soup, "Beaver Board" biscuit, "Foley" fritters, "Thorold" turkey, "Interlake" ice cream, "Provincial" pie, etc.

As a souvenir of the occasion, guests were given "A Message from Thorold," a booklet showing the schools, churches, factories and attractive views of the city. A number of pulp and paper mills are illustrated. There are interesting views of the canal and some pertinent data and other information.

After singing "God Save the King," and "My Country, 'Tis of Thee," Mr. George Carruthers, as toast master, welcomed the visitors on behalf of the local committee. He then introduced Mr. Stadler, as chairman of the Canadian Technical Section, and referred to him as having removed the line between the United States and Canada. Mr. Stadler, honoring the greetings of the Canadian Section, modestly deprecated any idea of annexing the United States, even if his Buffalo speech suggested it.

Short addresses were made by Mayors F. G. Gris-

dale, Thorold; T. F. Hastings, Merriton, and Alderman Riffer, for the Mayor of St. Catharine's. Former Mayor Burgoyne, of the "Standard," St. Catharines, spoke for the Press. Mr. Miller, United States Consul at Niagara Falls, Ontario, made a brief address, rising to the "Star Spangled Banner." Mr. T. J. Keenan moved a vote of thanks to the Thorold committee, and asked Doctor Otto Kress, of the Forest Products Laboratory, Madison, to second him. The last speaker was Mr. Battle, former Mayor of Thorold. Every speaker had something definite to say, and sat down when he had said it.

After lunch, we were all "Movied" for the third time in Thorold. Los Angeles had nothing on Thorold for movie stars that day. Visits were made to the Interlake Tissue Mills, Riordon Paper Company, Lincoln Paper Company (both mills), Garden City Mills and Kinleith Paper Mills at St. Catharines.

The local committee and the Thorold Board of Trade deserve the best that can be said for their hospitality and foresight.

The next meeting of the T. A. P. P. I. will be in Chicago in September, during the week of the 22nd, to coincide with the Exhibition of Chemical Industries, which this fall will be held there instead of New York.

P.S.—T. A. P. P. I. means Technical Association of the Pulp and Paper Industry.

It would be impossible to exaggerate the courtesy and efficiency of the T. A. P. P. I. committees.

CANADIAN EXPORTS \$99,259,166.

Official trade returns for the fiscal year ending March 31, 1919, just made available, show the value of Canadian exports of pulp, paper and pulpwood for the twelve months as \$99,259,166, as compared with \$71,825,500 for 1918, and \$52,975,457 for 1917, or a gain of \$27,433,666 over 1918 and of \$46,283,709 over 1917. In detail the figures show:

	1917.	1918.	1918.
Paper & Mfrs. of	\$26,123,215	\$37,865,330	\$45,165,795
Woodpulp, chem.	14,032,920	19,133,813	30,226,856
Woodpulp, mech.	6,371,133	6,487,079	4,479,915
	\$46,527,268	\$63,486,222	\$83,872,566
Pulpwood, unmanufactured	6,448,189	8,339,278	15,386,600

Total \$52,975,457 \$71,825,500 \$99,259,166
 For March, the concluding month of the year, exports jumped \$1,694,668 over those of March, 1918, the figures showing:

	1918.	1919.
Paper & Mfrs. of	\$4,880,224	\$5,970,598
Woodpulp, chem.	1,190,082	2,041,884
Woodpulp, mech.	600,685	226,554
	\$7,390,991	\$8,239,036
Pulpwood unmanufactured	560,520	1,408,143
Total	\$7,951,511	\$9,646,179

The significant feature of the returns, apart from the general increase in quantity and value, is the large amount of pulpwood exported. This has grown from 982,671 cords, valued at \$6,448,189 in 1917, and 1,002,127 cords, valued at \$8,339,278, in 1918, to 1,597,042 cords, valued at \$15,386,600, in 1919, an increase in one year of practically 100 per cent. The signifi-

cance of this becomes apparent when it is considered that the quantity of unmanufactured pulpwood exported last year was sufficient to have made 1,064,694 tons of paper, or about one-half the total quantity of newsprint used in the United States where the wood was sent. Sold at \$75 a ton, the present market price in the States, this quantity of paper would have brought into Canada \$79,852,050, instead of the \$15,386,600 received for it in the form of wood.

Exports of printing paper led all other grades in quantity and value. In 1918-19 Canada exported 13,248,542 cwt. (approximately 662,427 tons) valued at \$40,718,021. This is an increase of 1,146,677 cwt. (approximately 57,334 tons), in quantity and \$6,739,674 in value, over last year. Other grades of paper exported were: Paper board, \$3,037,279; wrapping, \$2,452,296; photographers' paper, \$1,302,886; wall paper, \$360,567; felt and roofing, \$310,778, and miscellaneous, \$983,968. All showed a substantial increase over last year.

Exports of chemically prepared pulp in 1918-19 amounted to 8,382,730 cwt., valued at \$30,226,856, as against 5,385,010 cwt., valued at \$19,133,813 in 1917-18, an increase of 2,947,920 cwt., in quantity and \$11,093,043 in value. Exports of mechanically ground woodpulp showed a falling off for the year of 802,968 cwt. in quantity, and \$2,007,164 in value as compared with the previous year. The figures being, 1917-18, 4,311,694 cwt., valued at \$6,487,079; 1918-19, 3,508,726 cwt., valued at \$4,479,915.

The United States led as our best customer for pulp and paper, the United Kingdom, Japan, Australia and New Zealand, following in the order named. Canadian printing paper exported in 1918-19 was distributed as follows:

	Cwt.	Value.
United Kingdom	9,310	\$ 38,484
United States	11,880,069	36,031,358
Australia	643,101	2,081,911
New Zealand	242,336	862,402
Other countries	473,726	1,703,866
	13,248,542	\$40,718,021

The chief foreign markets for Canadian pulp during the year were:

	Cwt.	Value.
Chemical Pulp.		
United Kingdom	140,364	\$ 611,399
United States	7,414,825	26,256,265
Japan	639,997	2,775,486
Other Countries	137,744	583,706
Mechanical Pulp.		
United Kingdom	2,528	3,033
United States	3,453,149	4,418,555
Other countries	53,049	58,327

France, which imported from Canada 626,285 cwt. of mechanical pulp, valued at \$471,040 in 1917, took none at all in 1918 or 1919, while exports to the United Kingdom of both chemical and mechanical pulp fell off from a total of 1,163,224 cwt., valued at \$3,057,422 in 1916-17 to 142,892 cwt., valued at \$614,432 in 1918-19. This was due entirely to lack of shipping facilities. Shipments of both paper and pulp from Canada to England should show a constant increase from now on.

No newspapers in Berlin because of a strike, according to a despatch. Maybe the Germans will get the truth now.

War Uses of Pulp and Paper

By A. G. DURGIN,

Chief of Pulp and Paper Division, U. S. Bureau of Standards.

(Continued from last issue.)

Cartridge Belts.

Exhibits No. —, No. —, and No. —, three samples of expendable cartridge belt for use with machine guns. This cartridge belt was prepared as a substitute for metal previously used for that purpose. The samples submitted are of the types No. 1 and 2, 80 pound kraft with a 10-mesh muslin cover; sample No. 3, 60 pound kraft with 13 threads of cotton string longitudinally interspaced between the papers. These samples show method of placing clips which was done by machinery, giving an accurate and efficient method of producing this material. A great deal of special work along this line was done by the Paper Laboratory of the Bureau of Chemistry. These belts were exposed to various conditions of heat and cold, of the extreme limits, and were found satisfactory throughout the complete range. The asphalt did not melt and soften under the elevated temperatures and the belt remained flexible in the cold. The Ordnance Department reports large quantities of this material had been purchased and that it would have been standard equipment by the first of the year. These belts were made in continuous rolls in five thousand pocket lengths, loaded and cut in proper length for packing into expendable ammunition boxes.

Exhibit No. —, expendable cartridge box for machine gun ammunition. In the interests of conservation of metal, a second type of cartridge box was designed by Captain Ladoo, blue print of the original design, photograph of the finished box and one of the specimens here exhibited. This box with an ingenious mechanism for introducing the shells into the breach was to be used for the strip type of expendable ammunition belt. A great deal of valuable work was done in collaboration with the Ordnance Department and the Paper Section by various manufacturers of cardboard boxes throughout the United States. Several samples satisfactorily duplicating the original submission were obtained with promise of quantitative production on demand. The signing of the Armistice together with other developments lead to the abandonment of this problem.

The Forest Products Laboratory at Madison, developed a waterproof plug for shrapnel shells, which consisted of a mixture of asphalt and wood pulp, having many advantages over the paraffined wood. Much work has already been done on this product and it seems quite possible that this mixture would find industrial application where waterproof and heat resisting articles are needed.

Pulp for Power.

The restrictions on sulphite pulp for nitration purposes were exceedingly strict. The best sulphite pulp for this purpose was spruce pulp, digested from ten to twelve hours at 65 pounds steam pressure, using not more than 5.5 per cent total sulphur dioxide. Henlock can be substituted for spruce to an extent of 20 per cent. Sulphite pulp is not to be bleached. Under clearly defined chemical methods for analysis, it must conform to the following specifications: Not more than .5 per cent. ash, not more than .8 per cent. other

extraction, not more than 25 per cent. KOH soluble. For soda pulp, pulp from jack-pine was successful, 8 to 10 hours at 90 to 110 pounds, using 10 per cent. caustic soda. It must conform to strict specifications, among which are: ash limitation, not more than .8 per cent., ether extraction not more than .4 per cent., KOH soluble not more than 8 per cent.

Airplane Fabric.

The Paper Section of the Bureau of Standards undertook the development of a paper which should have sufficient tensile strength to be used as a substitute for linen and cotton in airplane fabrics. This proposition was undertaken when it became evident that the supply of linen was entirely inadequate to produce wing coverings and before the weaving of cotton fabrics had been developed to the extent of producing a fabric preferable to linen. It was thought advisable to endeavor to produce a paper of satisfactory strength to increase the amount of raw material capable of being converted into products satisfactory for this purpose. Exhibit No. —, is a roll of paper prepared for this purpose. The raw material from which this paper was made is a mixture of jute and manila rope. Examinations of strips of this paper will show its remarkable tensile strength. A great many various types of experiments were performed on this paper with the idea of rendering it waterproof and fireproof and several runs of this paper were actually submitted to and used by the Aircraft Production Service in covering the wings in an experimental and special type of airplane which had specific war functions.

Another form of material that was used extensively at the front was a woven textile fabric colored green for camouflage use. The sample here shown is in itself an answer to the question of resistance of paper fabrics to varying atmospheric conditions, because this sample has been in actual service for a period in excess of six months. The shortage of jute and hemp in the enemy countries forced the development of many products which were direct substitutes for products made from jute, hemp and manila, and sisal.

The complete German bed sack taken from prisoners showing evidence of actual field service is an example of the extent to which the central powers were forced to go in the field of substitution. The photograph here shown gives a very good idea of the method in which these fibres were woven. The scale photographed in the paper gives a method of direct comparison.

Paper Textiles.

The previously mentioned shortage in the central powers forced still greater changes or substitutions which affected the personal equipment of the soldiers themselves. There are exhibited samples of wrapped leggings from German prisoners. The first sample in loose weave consists of strands of all sulphite paper, reinforced with a few cotton threads. The second sample consists of a warp of all sulphite, the fill being for the most part ramie, but containing traces of cotton. This second sample is a much closer weave than the first. Sample No. 3, obtained from the Director of Military Intelligence shows a larger, authentic sam-

ple of puttees, obtained from German prisoners and essentially the same as the smaller pieces discussed previously. Other parts of the equipment were the haversack, the grenade carrier, in which the warp was all sulphite paper and the fill a mixture of ramie with some sulphite. The last exhibit of paper for military equipment is a section cut from a haversack and woven entirely from sulphite stock.

An actual project was under investigation to equip part of our army with paper underclothing, made from the Japanese fibres and cleverly constructed so that no buttons were necessary. It was assumed by the promoters of this project that the clothing could be made sufficiently cheap to compete with the wool and cotton provided and that a suit could be worn until it became unserviceable and then discarded. Ten complete suits including socks were taken across during the month of September by one of the Army officers, with the consent of the Secretary of War, and with the avowed purpose of making a comparative test. Prior to departing with these samples, samples were submitted to the Bureau of Standards for comparison as to protecting qualities, that is, heat conductivity, with the standard clothing furnished by the army, and it was found that these paper garments had about 10 per cent. greater protection against cold than did standard equipment. Along the same line were paper vests, Exhibits No. — and No. —, which were used quite largely by the aviators because of their light weight and great protection.

Great as were the developments forced by shortage of material on the military forces of the central powers, they did not approach the changes effected on the civil population, due to the fact that the civil population was compelled to make sacrifices wherever possible to the military. The first two samples submitted are authentic samples of paper clothing, the first worn by prisoners and by soldiers on garrison duty, and the second by the civil population. This clothing made from paper, or at least containing a high percentage of paper, was quite largely used. The principal comment on this product was that it showed distinct tendency to crease in the folds and to sag and conform to the shape of the individual wearing it. It is also stated that its resistance to moisture was less than that of pre-war textiles. That the shortage was not confined to the central powers alone is demonstrated by the series of samples obtained from Sweden and other Scandinavian countries. These samples were made of 40 per cent. twisted paper, 40 per cent. cotton, and 20 per cent. wool waste, or shoddy. In technic of production much better products were developed in the Scandinavian countries than in Germany, as will be readily shown by examination of the samples here submitted for comparison.

The critical shortage of leather in the Scandinavian countries led to the development and utilization of a paper woven driving belt. A small sample cut from one of the Swedish driving belts is here shown, and demonstrates the ingenuity of the manufacturers in developing a practical substitute for leather and for rope drive.

Before the war the textile industry with paper as raw material had not passed the experimental stage in either Germany or Austria or the Scandinavian countries. At that time there were about two factories in Germany actually engaged in the manufacture of paper textiles. By the middle of the year 1917, when the effect of the English blockade became noticeable, there were two hundred and fifty firms engaged in

the production of paper textiles in Germany alone, and additional in Austria, giving a total of three hundred firms in the central empires engaged in the production of these various substitutes. At the very outset of the war there was one firm operating in Norway, one in Denmark, and four in Sweden. Throughout the entire period the development in the Scandinavian countries was slow, first because the paper textile industry did not have the impulse that it had in the central empires, and second, because the Scandinavian countries had been entirely dependent upon German manufacture for machinery. Between 1906 and 1908 there was perfected in England, a scheme of textile paper manufacture based on plans developed by an American, whom the Consular Service reports to have had wide experience in America, in England, and in India, in the production and development of textile fabrics. The impulse provided to the textile industry in Germany which was entirely lacking in allied or neutral countries was that provided by the general impression prevalent in Germany that it would be a long time after the suspension of hostilities before free commercial intercourse with other countries was established and adequate supplies of raw materials for her industrial development were afforded.

The consensus of opinion from all of these countries is that the best type of product for all these textiles is kraft. It should, however, be noted there are certain well-defined restrictions which limit the application of kraft to all papers. A compilation of some of the uses to which the textile substitutes were put and samples showing some of the actual products is now given: shoe-laces, braiding, a small sample of which was obtained from Sweden and shown in Exhibit No. —; webbing, four samples of which are shown: tailor's and milliner's sundry, carpets and matting; numerous samples of which are shown in Exhibits No. — and No. —. Together with these samples is shown an American product woven from paper which has seen actual service under the most trying conditions for a period in excess of five months. Wall coverings and tapestries are shown in Exhibit No. —. The possibilities of using many colors in paper and the variations of patterns by skill of the weaver open a broad field for the use of these paper textiles for wall coverings and tapestries. A small sample of insulating material for covering electric wires is shown. Roofing felts which previously were composed of wool waste for the most part were prepared in Germany, using paper as a basic substance. Exhibit No. — shows a sample of the class of products known as school knapsacks, market bags and shopping bags. In Germany, skirts and petticoats were made from paper, as also were children's clothing. Recent communication from the Consular Service states the stream of communications to the German press telling of new inventions in the field of textile substitutes has largely subsided and the enthusiasm has likewise waned, of which announcements have repeatedly been made that success had at last crowned their efforts to manufacture a suitable substitute for cotton from domestic plants. The promise that new materials as substitutes for clothing for the entire civilian population of Germany has not been fulfilled and the scanty reports appearing hardly hide the fact that the textile substitute movement has approached failure. Paper substitutes were not suitable for clothing, but were largely employed for manufacture of other products as exhibited. These have found a ready sale, not because the

product is recognized of the serviceability or superior value of the paper products, but because there is absolutely no other marketable product to be obtained, collars and shirt fronts were prepared from paper and from these collars is exhibited as item No. —. For the production of this product has been seriously considered in America, the idea being to produce a paper collar, salable, at a price of less than five cents which can be worn for a day and discarded, eliminating dependence on laundry.

Special Exhibit No. — shows the leather substitutes which are very common in Germany and which are 100 per cent. paper, painted in imitation of leather. It will be noted that at best they are a very exceedingly poor imitation of the leather or artificial leather commercially sold in this country.

Consular reports state that a satisfactory sail cloth has been prepared and that corsets and brasseries were commercially manufactured and sold from paper.

Having reviewed in a general way the class in which substitution took place, I wish to mention in brief the definite methods commercially used in the manufacture of these textile fabrics.

Quoting in abstract from Consular Reports of December 7, 1918: The proposition consists in converting lengths of paper into textile yarn, with the associated question of actual utility of the finished product. The elements of the problem are there: first, sub-division of the web of paper into strips of suitable dimension; second, twisting and rolling of these strips continuously into cylindrical form; third, subjecting the cylindrical length of paper to a twisting operation to increase its tensile strength to the maximum.

Process of Emil Claviez et Cie:

System No. 1. The rolls of paper are taken, and cotton, jute, hemp waste pasted thereon. The roll is then cut into small strips and spun. The waste does not add any strength to the final yarn, but gives it the appearance of a fibrous yarn. System No. 2 is that of taking a roll of paper in the humidified state, cutting into numerous strips and spinning. It must be spun moist. The speed of these machines has militated against their success in ordinary peace times. Exhibit No. — shows finished product made from this process.

The Kellner-Turk system is a modification or consolidation of the early plans of Carl Kellner, pioneer in the wood pulp industry, and of G. Turk. It consists essentially of a scheme for twisting the fibres and rolling the strip into a hard circular aggregate. The Kellner system is designed to succeed the press rolls of the paper machine. The stock is introduced over endless bands or rollers, the spinning and twisting carried out on the still moist thread. Most of the twisting is carried out on the wing spindle machine. As operated the process has limitations due to the relatively slow speed at which twisting of the thread can be effected.

The Crone system covered by eight basic patents has the following advantages: Formation of web on the machine wire and its sub-division into strips by the impact of jets of water, strips are subjected to action of press rolls for removal of water, dried over dryers, and wound in magazine roll which holds a series of discs in close contact, from which they are detached for further operation of twisting. The winding off and twisting is done on a slitter machine, comparable with those used in the cotton spinning industry. The English have adopted in their textile work a type of slitter and rewinder. It is cheaper to construct and

more rapid in output than any of the other continental machines. They have also modified and rendered more highly efficient the machinery for spinning the strips into finished thread.

No mention has been made of the artificial textiles which have been prepared by converting pulp or paper into secondary products like cellulose nitrate or cellulose acetate, and from that producing artificial silk. It should, however, be noted that while this is not a new process, war conditions very materially stimulated the production of this product. There also has been recently brought to America the scheme for making non-inflammable moving-picture films, using paper basic stock of any type as raw material.

Even in the reconstruction period, paper is having its new or novel uses in commercial work. From the Forest Products Laboratory of Canada, we learn that paper and pulp are being used in the production of artificial limbs. Definite information has not been obtainable as to whether the limbs so made are the preliminary or practice limb, or whether paper will enter into the final product or finished limb. From the same source we learn that the Japanese have perfected a paper vessel for cooking purposes.

FORMED PAPER MILL SUPERINTENDENTS' ASSOCIATION.

At a meeting of superintendents of twenty-five Wisconsin pulp and paper mills last week, a new national organization, to be known as the Pulp and Paper Mill Superintendents, was formed. The association was organized for the purpose of establishing a closer bond between the superintendents of the various mills and to afford them a means of interchanging views regarding the problems confronting paper mill superintendents. National officers were elected as follows: William C. Nash, Lakeside Paper Co., Neenah, Wis., president; J. P. O'Connell, Northern Paper Mills, Green Bay, Wis., vice-president; Peter J. Massey, Chicago, secretary and treasurer.

The Export Journal of Canada, which is issued by the Export Publishing Co., 171 St. James St., Montreal, has made its appearance. The mission of the new publication is to get the foreign importers and the Canadian exporters together. The Export Journal claims to be the first and only exclusive export magazine in the Dominion, and will be issued monthly. H. R. Piekens is the publisher and Frank Wall the editor.

At a meeting of the Mattagami Pulp and Paper Co., Limited, which was held in Toronto last week, Clarence Hillsmith, of Hillsmith & Co., who are widely known paper mill engineers of Boston, Mass., was elected a member of the Board and appointed to the position of managing director of the company. The latter are enlarging their output of sulphite pulp at Smooth Rock Falls to 150 tons a day.

The new 162 inch paper machine, which has been installed by the Brompton Pulp and Paper Co., of East Angus, Que., was put in operation this week, and will result in the output of the newsprint by the firm being increased to 120 tons a day. The company state that they have sufficient pulp wood on hand to run their industries for the next eighteen months.

Henry Charles Webb who died in Toronto this week, was one of the best known master printers in the city, having been in the printing business for forty years. He is survived by his wife, five sons and a daughter, and was in his sixtieth year.

Alcohol From Sulphite Waste Liquor

By RALPH H. McKEE, Ph.D., Columbia University.

At the meeting of the Technical Association of the Pulp & Paper Industry in Buffalo, June 12, the following paper was read and discussed. Mention is made of freedom from tax. This, of course, applies to the United States. Present internal revenue conditions in Canada are by no means so encouraging to this use of waste liquor because of tax restrictions.

As several of you know, there were worked out at Columbia University, about a year and a half ago, certain laboratory experiments which made it appear as if the fermentation of sulphite waste liquor could be carried out with better yields, and at the same time more cheaply, than in the processes hitherto used in this country and in Europe for obtaining alcohol from this source. Sweden and Germany have some thirty plants, and this country two plants making alcohol from sulphite waste liquor. The new method¹ is unlike the methods which have been commercially used hitherto, in that it does not require neutralization of the acid waste liquor.

Yeast will not grow in the raw sulphite liquor, and it has been thought that this was due to sulphur dioxide and sulphites being yeast poisons. Yeast organisms require the presence of oxygen for their growth, and from my experiments it would seem that sulphur dioxide and sulphites are not yeast poisons in the amount that they are present in sulphite waste liquor, except to the extent that they absorb the oxygen present in the solution, and in that way bring about oxygen starvation of the yeast. The simplest method of meeting this oxygen requirement of the yeast is to cause air to bubble through the solution during the fermenting period. In the old neutralization process air is sometimes blown through the liquor during the neutralization process, but this is not sufficient to meet the yeast requirements for oxygen during the fermentation period.

I have carried out fermentations using sulphite liquor from more than a dozen mills. The yields of alcohol vary with the character of the cook, an eleven hour cook at not too high a temperature ordinarily gives the highest percentage of alcohol. The yields of 95 per cent alcohol vary between 0.55 per cent and 1.35 per cent, with an average of 0.95 per cent, calculated from the volume of sulphite waste liquor.

The fermentation is facilitated if a portion of the sulphur dioxide present in the liquor is removed by blowing it with steam or air. Commercially this pre-fermentation treatment would be carried out as follows: The hot sulphite waste liquor would be introduced at the top of a tower and steam and air at the bottom. The resulting liquor would then be cooled by running through a second tower against a current of air, or by use of cooling coils. The sulphur dioxide recovery for use in the acid system is equivalent to $\frac{1}{2}$ ¢ to $\frac{1}{4}$ ¢ a gallon reduction of cost of alcohol.

After being cooled to the fermentation temperature yeast and yeast foods are added and a slow current of

air run in at the bottom of the fermentation tank. This air is simply to keep the solution saturated with air during the fermentation process, and is continued through the entire fermentation period of 60 to 70 hours.

The beer resulting from the fermentation is then distilled in a copper still or in a cast iron still with an enamelled lining. This first distillation will give a high wine alcohol containing some sulphur dioxide. This high wine is then redistilled in the presence of a little caustic soda, and gives 95 per cent alcohol of commercial grade ready for denaturing or shipment. My preference is for a continuous beer still, and a batch high wine still, both of copper.

It is the common belief of those not intimately acquainted with the industry that the alcohol, obtained when sulphite waste liquor is neutralized with lime and fermented, does not carry sulphur dioxide into the still column. This is not correct. It is necessary in the neutralization processes as well as in the new process to remove sulphur dioxide from the alcohol by the use of caustic soda or other alkali.

The advantage of the new process over the neutralization processes that have been used are: the saving in equipment installation; the saving in lime for neutralization; the saving of the labor and expense involved in neutralization and filtration; and, most important, the apparently more uniform and better yields of alcohol.

It has been our privilege to carry out this spring a series of large experiments at the plant of the Hammermill Paper Co., where charges of somewhat more than three thousand gallons each were treated and fermented. I wish at this point to express my appreciation of the many courtesies and unflinching helpfulness of the Hammermill organization to my associates and myself in the weeks we have been at the mill.

These experiments have given results so interesting and promising that we are installing a semi-commercial still and plant, and accordingly there is now being erected a 28-foot Badger still which, with several 13,000 gallon tanks adjacent to it, will permit our obtaining accurate data on cost of operation.

You will be interested in having the cost data as calculated from the last three runs of 3,200 to 3,600 gallons liquor each. The data given are calculated to a basis of a 100 ton sulphite mill, 1,500 gallons sulphite waste liquor from each ton pulp made.

A—Boiler House Power (steam) per hour—

	Basic Run No.		
	5	6	7
Removing excess sulphur dioxide	442	510	173
Distilling alcohol	25	25	25
Pumps	50	50	50
Air compressor	15	15	15

Calculated total boiler H. P. per hour	532	600	263
Allow boiler H. P. per hour	600	700	350
Assuming boiler H.P. at \$50 per year	\$30,000	\$35,000	\$17,500

¹ U. S. Patent No. 1,273,392. Also foreign patents.

B Labor.			
Superintendent, \$200 per month	\$2,400	\$2,400	\$2,400
1 foreman, \$150 per month	1,800	1,800	1,800
2 stall men, 60c per hour	4,320	4,320	4,320
6 helpers, 45c per hour	9,810	9,810	9,810
	<hr/>	<hr/>	<hr/>
	\$18,330	\$18,330	\$18,330

C Plant:			
Building 21,000 sq. ft. at \$2.75, call it	\$60,000	\$60,000	\$60,000
16 tanks, 225' x 18'	16,000	16,000	16,000
Still, denaturing outfit, cisterns, etc.	60,000	60,000	60,000
Piping	15,000	15,000	15,000
Pumps, air compressor, motors, etc.	5,000	5,000	5,000
	<hr/>	<hr/>	<hr/>
	\$156,000	\$156,000	\$156,000
Call it	\$160,000	\$160,000	\$160,000

Cost of 95 per cent Sulphite Alcohol.

	Run 5	Run 6	Run 7
Boiler H.P. at \$50 per H.P. year	\$30,000	\$35,000	\$17,500
Labor	18,330	18,330	18,330
Yeast food	1,500	1,500	1,500
Caustic soda	500	500	500
Interest on plant (6 p.c. on \$160,000)	9,600	9,600	9,600
Depreciation and repairs (10 per cent. on \$160,000)	16,000	16,000	16,000
Insurance, taxes, 3 p.c. (no U. S. Govt. tax)	5,000	5,000	5,000
	<hr/>	<hr/>	<hr/>
	\$80,930	\$85,930	\$68,430

Percentage 95 p.c. alcohol obtained			
Calculated to original liquor taken, p.c.	1.02	1.07	1.00
Gallons alcohol per year	459,900	481,500	450,000
Apparent cost of alcohol per gallon	17.6c	17.9c	15.2c
Allowing unforeseen items, \$15,000 a year	3.	3.	3.

Calculated cost of alcohol per gallon	20.6c	20.9c	18.2c
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It is to be presumed that further work will simplify and cheapen the process, and it is my expectation that with sulphite liquors yielding 1 per cent or better of alcohol, the cost of making 95 per cent alcohol will approximate closely to 15c a gallon.

B. C. ROOT BACK FROM B. C.

B. C. Root, of the Hydraulic Machinery Co., Montreal, is back from his trip to British Columbia. Unfortunately for B. C. (Root) much of the coastwise shipping was tied up by strikes and he had to go by yacht from Ocean Falls to Hardy Bay. From here he had a nice tramp of 11 miles and a motor boat trip to Port Alice, where he saw the new sulphite plant of Whalen Pulp & Paper mills. Mr. Root says there did not seem to be much trouble about ocean shipping and most of the mills were busy.

The men have gone back to work at Powell River, pending a definite settlement of their grievances. The sulphate mill of the Rainy River Pulp and Paper Co. will soon be in operation again, following the reorganization.

According to the Pulp Press, the Hydraulic Machinery Co. is building the Record Automatic Grindstone Dresser recently described in the Pulp and Paper Magazine. In order to take care of increased business and to provide special facilities for making their pulp and paper mill specialties, the company is putting up a new building.

PAPER CONTROL TRIBUNAL ON LAST LAP.

Although the treaty of peace may be signed before their judgment has any important effect on the future of Commissioner Pringle's newsprint order, the judges of the Paper Control Tribunal are at work on the case. In order to accommodate the publishers' counsel, Mr. Tilley, who sailed Monday night for England, the hearing was suddenly advanced from the 18th to the 16th, in Montreal. The judges accepted printed briefs from Mr. Tilley for the publishers, from Messrs. Phillips and Ross for the Fort Frances Pulp and Paper Co., and from Messrs. Montgomery, Orde and Henderson for the other manufacturers. The manufacturers' brief is similar to arguments previously made, except that it makes and supports the claim that the retroactive feature of the \$69 price should be effective as from January 1, 1918. In addition to the lawyers' briefs, the Tribunal will have other documents that have been sent from Ottawa.

A slight misunderstanding in regard to the rebate of duty on slush sulphite by the Government and the return of such moneys to consumers by the Fort Frances Co. is being straightened out. Some of the sulphite used on the Canadian side is in the lap form, and on this there is no rebate. It is a matter of book-keeping and calculation to determine the amount of repayment on the basis of slush pulp used in the newsprint sold.

The judgment of the Court is looked for in the near future.

ST. MAURICE HAS ATHLETIC FIELD.

An event that promises interesting developments occurred when the St. Maurice Paper Co. celebrated the opening of their new athletic grounds at Cap Madeleine by defeating their worthy opponents, the Three Rivers Ship Builders, in a close game of baseball by a score of 3 to 2.

The spectators, some five hundred in number, were very agreeably surprised to see the visible results of the progressive spirit of the St. Maurice Paper Co. in providing such a spacious playing field and grand stand for the promotion of sport and friendly spirit amongst their employees.

A four club league has been formed at Three Rivers, consisting of the following teams: St. Maurice Paper Company, Cap Madeleine, North Shore Power Company, Three Rivers Shipyards, Limited, and Laviolette Club. An interesting schedule of games has been worked out.

There is a baseball club at Grand'Mere, and should the other paper mills and chemical plants organize teams, there is a chance for a very lively summer in this line of sport. A successful baseball season would doubtless encourage the building of rinks and hockey would be assured for next winter. There is nothing like clean sport for clean men and boys.

Mr. James W. Sewall and Mr. Joseph D. Lamo, of the Sewall Co., Old Town, Maine, have returned from a short cruising trip in the Adirondacks.

UNITED STATES NOTES

The Paper Trade and the reconstruction was the topic discussed by several representatives of the paper industry at the group conferences, made up according to allied trades, at the convention last week in Detroit of the National Association of Credit Men. W. F. Roemler, of the Diem Wing Paper Co., Cincinnati, O., speaking at the table of the group conference representing wholesale paper and kindred lines, told something of the history of "Trade Acceptances." He outlined some of his experiences in connection therewith, and urged the delegates to consider carefully the merits of the proposition with a view to its adoption. "How the Paper Trade Can Aid Prosperity" was the subject of A. Lawrence Smith's address. He spoke of the opportunity of the papermen during the reconstruction period, and voiced his opinion that better co-operation is needed just at this time. Mr. Smith is a representative of the Union Paper and Twine Company of Detroit. The conference was concluded with the presentation of a request of the National Reserve Board for statistics on the production of paper by E. G. Holmes, of C. P. Lesh Paper Co.

All future investments apart from those in the explosives and chemically allied industries are to be made through the Du Pont Securities Company, and the E. I. Du Pont Nemours Co. will confine its future expansion to the explosives and chemically allied industries. This announcement has just been made in a letter sent to the stockholders of the E. I. Du Pont De Nemours Co. by Pierre S. Du Pont, chairman of the board, declaring the purpose of the new Du Pont Securities Company.

The American Paper Mills Corporation was given a charter last week at Albany to do business in New York City, manufacturing paper. The new concern is capitalized at \$100,000, and its incorporators are: M. H. Freimark, 540 Ocean Ave., Brooklyn; I. Slot, 1145 President Street, Brooklyn, and W. C. Ridgway, Englewood, N.J.

A report recently received by the Department of Commerce from one of its agents in Germany discounts the likelihood that German paper textiles can compete permanently with cotton. In the opinion of this investigator, they are likely to endure only as a war substitute. Except for a few experimental sorts they are unwashable. Prices of the paper textile substitutes, past and present, are prohibitively high. One shirt has come as high as 32 marks, which is higher than what a silk shirt can be obtained for at present in the United States.

In an address to the members of the Cleveland Advertising Club last week Secretary of Commerce William C. Redfield declared that in a quiet way the industries of the country are moving on. Little by little, he said, they are taking up the slack and the country is settling down to the assurance that matters are becoming stabilized with the wages of labor standing where they are.

Xavier Schyrin and Jacques Languequin, recent arrivals in New York City, are visiting the United States for the purpose of making an inspection tour

of the paper mills and plants of the country with a view to obtaining a general survey of the paper trade. They are interested particularly in the newsprint and paper machinery features. The French experts, both of whom are connected with the paper industry in France, expect to carry back with them data and figures bearing on all phases of the trade in America. Figures of what it costs to obtain the machinery and materials to manufacture paper will be taken by them and compared with similar figures pertaining to French mills. The two men visited mills at Oswego and Fulton, the Aldrich Paper Company mill at Gouverneur, and the Bagley and Sewall plant at Watertown, N.Y. Following their inspection of other mills in the northern New York section, they intend to tour the Canadian paper centres.

Among the new incorporations in Delaware last week was the National Folding Box Association, capitalized at \$1,500,000. M. L. Harty, S. L. Mackey, and M. G. Kelly, all of Wilmington, Del., are the incorporators.

Completion of a unique laboratory, where experiments in dyes and chemicals will be conducted is expected within the next thirty days, the Bureau of Chemistry in Washington announces. The results obtained in the testing of dyes and chemicals and their intermediates will be given to manufacturers, as well as assistance and advice in the building up of the dye industry. Whenever colors or certain dyes are obtained which are not being manufactured they will be sold until such time as they are produced by private concerns.

Plans and specifications for a new paper mill plant for the Oregon Pulp and Paper Company, costing about \$1,000,000, have just been completed by Charles Eaton, an engineer of Watertown, N.Y. Construction work will be begun immediately at Salem, on the Willamette River. When this plant has been completed, it will be one of the largest of its kind on the Pacific Coast. It will be the third big paper mill built during the last ten years in the coast section to be designed by Mr. Eaton. The paper mill will be equipped with two large machines for the manufacture of specialties. Two big paper machines have already been ordered from the Bagley and Sewall Company, and are now under construction. A 40-ton sulphite plant will also be built in connection with the plant.

A. G. DURGIN WITH THE SPANISH RIVER MILLS.

A. G. Durgin, who has been chief of the Paper Section at the Bureau of Standards in Washington since the resignation of Fred. C. Clark, is now associated with the Spanish River Pulp and Paper mills. Mr. Durgin has lived most of his life within smelling distance of the pulp and paper mills of Orono, Old Town and Bangor, Me. He gave the first course in pulp manufacture in any American college and had charge of the pulp work at the University of Maine, from which he is the recipient of two degrees. Durgin and Shipman will make a great technical team at Spanish River and the results of their work will be watched with great interest.



Technical Section



TECHNICAL SECTION PLANS.

Plans are progressing rapidly for the summer meeting. A brief outline is:

Leave Montreal Monday, July 28, by Str. "Montreal."

Leave Quebec Tuesday, July 29, by Str. "Murray Bay."

Meeting of the Section, with papers and discussions on board the boat.)

Arrive Chicoutimi, Wednesday, July 30.

Take train to Kenogami for visit to Price Bros. & Co. Return to St. Alphonse, and go aboard Str. "Saguenay," Wednesday, 11:30 p.m., bound for Montreal.

Details will soon be ready. The Canada Steamship Lines are co-operating in providing an interesting and enjoyable meeting.

WOODLANDS SECTION WILL SEE HYDRO-PLANE.

Perhaps the most interesting feature of the program for the meeting of the Woodlands Section of the Canadian Pulp & Paper Association next week is the announcement that the hydroplanes which are to be used this summer in scouting for fires by the St. Maurice Forest Products Association will give a demonstration. The program as announced by the secretary of the section, is as follows, and it is expected that there will be a large attendance. The meeting will give an opportunity for an exchange of views and information on a number of important topics relating to the protection and utilization of Canadian forests.

Wednesday, 25th June.

Leave Montreal, C.P.R. train, 8:50 a.m., arriving at Berthier 11:10 a.m., changing at Berthier Junction, or

Leave Quebec, C.P.R. train 8:30 a.m., arriving at Berthier 12:50 p.m., (changing at Berthier Junction.)

From Berthier Station by cars to Nurseries, where luncheon will be served at one o'clock.

Inspection of Nurseries—return by cars to Berthier to connect with 6:53 p.m. train to Three Rivers.

Dinner served on train in diner.

From Three Rivers by train 8:05 p.m. to Grand Mere, 9:20 p.m. Stay on sleeper.

We are informed by the Minister of Lands and Forests, Hon. Jules Allard, that arrangements will be made to give the official welcome to the Forestry Service hydroplanes which will give complete demonstration as to the work that is planned for the coming summer.

Thursday, 26th June.

Inspection of Proulx Nurseries. Demonstration of tractors, fire pumps and slash burning.

Luncheon at Grand Mere, leaving Grand Mere 2:15 p.m. to connect with 3:40 p.m. train to Montreal or 4:50 p.m. train to Quebec.

REVIEW OF RECENT LITERATURE.

B-4. Experience of a forestry engineer officer in France. Major Frank R. Barns. Amer. Forestry, Oc-

tober, 1918, p. 586.—Describes forestry conditions in France, as observed by the 20th Engineers (forest) U.S.A.; illustrated. C. L.

B-4. The uses of wood; the employment of wood as house finish. Hu Maxwell, Amer. For., Oct., 1918, p. 583. The sixth article of a series.—Describes the evolution of methods of wood-working, from the slow handwork to the rapid machinery at present in use. Comparative uses of hardwoods and softwoods. Comparisons of woods from the various forest regions of the United States. Use of foreign woods.—C. L.

B-9. An Empire partnership in forestry. M. C. Duchesne. Canadian For. Journal, August, 1918, p. 1831.—"We should make amends for our past indifference and start a national campaign to encourage forestry not only in Great Britain but throughout the British Empire."—C. L.

B-9. Bringing back the white pine forests. R. H. Campbell, Can. F. Journal, July, 1918, p. 1765.—"Clear-cutting vs. diameter limit system. The problem of how to secure natural regeneration. "Until the forester gets into active touch with the timber operations and has some authority in directing them, so that observations will be made accurately and systematically, and with due regard to all factors, we will be working largely in the dark. It is by this method and by this method only that the forests of Europe have been brought to the perfection they have reached. It has taken time, and it will take time in Canada, but a beginning on right lines as indicated, can not be made too soon."—C. L.

B-9. Why forest reserves are created. H. C. Wallin, Can. F. Journal, July, 1918, p. 1780.—The policy of the Dominion Government with respect to the establishment of forest reserves on western Crown lands. Methods of preliminary examination. Reforestation of denuded lands.—C. L.

B-9. Canada's pulpwood resources. Can. For. Journal, July, 1918, p. 1785.—An estimate by the Commission of Conservation of the approximate amount of material suitable for pulpwood in the various provinces of Canada. The total of spruce and balsam for eastern Canada is given as 563 million cords; prairie provinces spruce and balsam, 85 million cords, and poplar 100 million cords. British Columbia 285,370,000 cords of Sitka spruce, western hemlock, balsam and cottonwood. Total for all Canada, 1,033,370,000 cords.—C. L.

B-9. Forest legislation in Canada, 1917-18. Can. For. Journal, July, 1918, p. 1791.—A resume of public measures in the Provincial and Federal fields. N. B. Forest Act and Forest Fires Act; Dominion legislation; legislation in Ontario, Quebec, Albert and British Columbia.—C. L.

K-7. The art of determining the composition of papers—deails of furnishes. (L'art d'établir la composition des papiers) E. Arnould, Le Papier, 22, p. 97, 1918, cf. Pulp & Paper Magazine, 17, p. 336.—In this article Arnould goes more fully into the details of the general principles laid down in the previous article, treating of the various kinds of stock which must be used to obtain the desired properties, and the ways

of doctoring up improperly prepared beater charges. He lays down as a general principle that the first charges should be rather light and the coloring and loading added be less rather than more than is required to give the proper color, as it is always relatively easy to add more of these, even when the charge has started running on the machine. As regards sizing, the soap should contain about 30 per cent free resin, and the solution about 28-30 g. of resin per l. About 4 per cent resin and 6-8 per cent aluminum sulphate, on the weight of the paper, should be used.—A. P.-C.

K-10. Sizing for paper. E. Fues. U. S., 1,276,206. Aug. 20.—In making sizing composition containing precipitable substances such as solutions of fatty acids or rosin acids, shellac, albumin or casein mixed with alum, Al. sulphate or other acid salts or acids which would normally effect precipitation of the first-named substances, a protective colloid such as animal size or gum arabic is added to prevent such precipitation. If unsized paper is dipped in a solution of such a sizing mixture, squeezed and dried on drying cylinders, it is evenly sized with less sizing than required when a rosin size is mixed with pulp while in the beater. Satisfactory results are obtained even when Ca or Mg salts are present in the H₂O used. Basic acid dyes may also be used separately or together in the sizing.—(Chem. Abs.)

K-18. Composition for filling paper board, leather board or similar materials. W. V. Lander. U. S. 1,277,322, Aug. 27.—A composition for filling the pores of pulp-board or other porous materials is formed of petroleum residue and rosin dissolved in gasoline.—(Chem. Abs.)

K-23. Fibrin paper as a hemostatic agent. S. C. Harvey. Ann. of Surgery 68, 66 (1918); J. Am. Med. Assoc. 71, 773.—Fibrin of beef blood was passed through a fine meat chopper and washed in running water for 24 hours. It was then shredded by prolonged trituration in a mortar and shaken up with about twice its volume of water. This was thrown while in suspension, into a tray with a screen bottom over which was a single layer of surgical gauze which received the fibrin in an even layer. The fibrin was then covered with another sheet of surgical gauze and turned out on a towel with care not to tear the fibrin film. The whole was placed between towels of double thickness and subjected to high pressure between pressure plates drawn together by bolts. The apparatus was then autoelaved at 15 to 20 pounds' pressure for 30 minutes. A fibrin paper resulted from which the gauze could be stripped off, leaving a rough surface. The thickness of the sheet depends upon the amount of the fibrin thrown on the screen. The product was elastic, strong, pliable when damp, and brittle when dry. It softens in water, but may be sterilized repeatedly with boiling water or steam. It is insoluble in alcohol, ether, chloroform or acetone. Concentrated acids or alkalis cause it to swell and disintegrate, but if diluted these agents have no effect. Its surgical applications are discussed, an important point of which is that it can safely be closed within the wound.—(Chem. Abs.)

K-23. Carbon copying paper. C. Masuda. Jap. 32, 218, Feb. 16, 1918.—Paper is treated with petroleum and copying ink consisting of gelatin 10, formalin 5, glacial acetic acid 5, printing ink 35, and a little petroleum.—(Chem. Abs.)

K-23. Paraffin paper. Tayo kakoshi-kabushiki-kaisha. Jap. 32,498, Apr. 9, 1918.—Stearin is saponified with Na₂CO₃ and MgSO₄ is added to produce a Mg soap. This soap is mixed with paraffin and diluted with liquid paraffin. The resulting solution is painted on paper.—(Chem. Abs.)

K-23. Filter paper. Y. Sato. Jap. 32,362, Mar. 13, 1918.—Fibres of waste white cotton cloth are beaten and bleached in the usual manner, and the H₂O is expelled. The fibre is then treated with a mixed solution of HCl and ZnCl₂.—(Chem. Abs.)

K-23. Ashless filter paper. Y. Sato. Jap., 32,311, Mar. 5, 1918.—The filter paper is treated, in piles, with a mixture of aqua regia with excess HNO₃ and HF. Practically all mineral matter is dissolved out.—(Chem. Abs.)

L-0. Paper packing. G. Hakoishi and S. Satake. Jap., 32,760, May 29, 1918.—Paper made from paper mulberry is treated with konnyaku paste, Na phenolate, glycerol, gelatin solution, graphite powder and formalin.—(Chem. Abs.)

K-0. The paper industry of Japan. The Paper Mill, 42, No. 16, p. 20 (1919).—Data on the composition and manufacture of various Japanese papers is given.—R. C.

L-0. Process for converting cellulose into glucose. (Procédé pour convertir la cellulose en glucose). French patent No. 489,692, granted to R. A. Koehler, U.S.A. Le Papier, 22, p. 121, 1919).—The distinctive features of this process lie in the use of gaseous HCl, excess of which is always present during the reaction, and in the small water content of the treated mass, resulting in the use of a small quantity of HCl, most of which can be easily recovered. Cellulose is converted into glucose according to the equation: $(C_6H_{10}O_5)_n + nH_2O = nC_6H_{12}O_6$. The wood, or other cellulose containing substance, in a finely divided state, e.g., saw-dust, must contain an amount of water equal to at least 10 per cent of the weight of cellulose, preferably somewhat more. If water is added it must be thoroughly mixed in. The paste is introduced into a suitable container, and HCl gas is passed in until the water is saturated at atmospheric, or preferably slightly higher, pressure, giving a solution of at least 40 per cent HCl. There is at first a slight increase in temperature, but this is not harmful. The mass is allowed to stand until the conversion is complete. At ordinary temperature and pressure this takes from 24-72 hours; at higher temperatures and pressures, a few minutes. The excess of HCl is removed by passing a current of air through the mass or by creating a vacuum. The small amount of acid remaining can be removed by distillation in vacuo or by neutralisation. Cellulose, hydrocellulose, oxycellulose, cellulose hydrate and combined cellulose can be treated by this process, the yield being 95-100 per cent of the theoretical. For the production of alcohol, the mass may be treated with water and fermented without separating the insoluble residue. If the amount of water is insufficient for complete conversion, products intermediate between cellulose and dextrin are obtained. Similarly, if the HCl is eliminated by a current of air, part of the glucose loses one molecule of water, giving this same intermediate product, which is retransformed into glucose by boiling in water.—A. P.-C.

PULP AND PAPER NEWS

The Toronto Paper Mfg. Co., Toronto, has just declared its half yearly dividend of three per cent, together with a bonus of one per cent, on the capital stock of the company. The plant at Cornwall is very busy at the present time and the new sub-station, which the Hydro Electric Commission has erected for supplying additional electric power to some of the departments, is completed.

The Department of Lands, Forests and Mines of the Ontario Government is advertising for tenders to cut timber of various kinds in the townships of Groves and St. Louis in the district of Sudbury, the time for receiving bids expiring on July 16th.

E. P. Foley, of the Foley-Rieger Co., Toronto, who is President of the Board of Trade in that town, spent several days in Toronto last week attending the annual meeting of the Canadian Manufacturers' Association.

J. F. Ellis, of Toronto, President of the Canadian Paper Trade Association, has been re-elected Treasurer of the Canadian Manufacturers' Association, for another term. He has occupied the position of Treasurer for a great many years and has always taken a deep interest in the work of the Association of which he was President for two years, 1898-1900.

The death took place in Toronto last week of Edward J. How, at the age of 69 years. He was for over thirty years treasurer of the local Typographical Union and leaves a wife and four children.

William J. Bulman, President of Bulman Bros., lithographers and printers of Winnipeg, who ably presided at the annual gathering of the Canadian Manufacturers' Association in Toronto during the past week, of which body he is the retiring President, was accorded a hearty vote of thanks for his splendid, faithful services. Under his direction the membership has made great strides. While in Toronto, Mr. Bulman found time to call upon a large number of friends in the paper trade.

G. L. Sills, a well known stationer and paper dealer of Belleville, Ont., died last week after a long illness. He was aged fifty years and was a member of the city council for some years.

It is the intention of New Brunswick to have an aircraft patrol for the protection of the forests of the province in the near future. The Bathurst Lumber Co., of Bathurst, N.B., one of the leading lumber and pulp enterprises in the East, are said to be considering the addition of aircraft to the means of patrolling their valuable timber limits. Captain Dan Owen, late of the Royal Air Force of New Brunswick, has been engaged by a large firm in the United States and will command an expedition to Labrador in the interest of his employers for the purpose of surveying the vast timber and pulpwood lands owned by the company in that country. Two aeroplanes will be used, one a seaplane and the other a landplane, and flying at a high altitude, photographs will be taken and maps made of the various forests.

The Riordon Pulp and Paper Co., Montreal, have de-

clared the regular quarterly dividend of one and three quarter per cent, on the preferred stock of the company.

Among the new concerns which have just been granted a provincial charter are the Progressive Rag and Metal Co., Limited, of Toronto, with a share capital of \$40,000; the Regal Paper Box Co., Limited, with a share capital of \$40,000 and headquarters in Toronto and the Moose Lake Lumber Co., Limited, of Cobalt, with a capital of \$10,000.

George B. Nicholson, M.P. for East Algoma, who is the Chairman of the High Cost of Living Committee of the House of Commons, and also a member of the firm of Austin and Nicholson, dealers in pulpwood, Chapleau, Ont., delivered a frank and straightforward address at the annual banquet of the Canadian Manufacturers' Association in Toronto last week. He told his hearers some plain truths as he saw them in connection with the present unrest in Canada. Mr. Nicholson spoke as a member of fifteen years standing of the large labor organizations and as an employer of labor for the last seventeen years. He bluntly told the manufacturers that they would do much to solve the present situation if they would recognize labor, the good they could get from it being organized and urged that they should help to build up its organization along proper lines.

Prof. B. E. Fernow, who has been dean of the Faculty of Forestry, Toronto University, for many years, has asked to be relieved of his work owing to poor health and that his resignation should take effect this summer. It is rumored that his successor may be Dr. C. D. Howe, a noted Forester, who has been on the staff of the Forestry Department for several years, and is widely known all over the Dominion.

The cardboard manufacturers of the American Pulp and Paper Association have adopted trade customs regarding standard thicknesses, variations in thicknesses, standard stock sizes, standard stock colors, overruns and under-runs, etc. Copies of the new trade customs have been received by a number of leading paper dealers in the Dominion.

Rev. Dr. Briggs, made his last report on the finances of the Methodist Book and Publishing Room at the Toronto Methodist Conference. He said that while the department was valued at \$83,000 forty years ago, it was now valued at \$807,000. Book sales were increased during the past year by \$48,000, and the manufactory sales by \$140,000. A committee was appointed to look into the whole matter of church publicity during the coming year and report at the next conference.

A. W. Wright, Vice-Chairman of the Workmen's Compensation Board, Toronto, and one of the best known public men in Ontario, especially in labor, political and journalistic circles died last week after a long illness, aged seventy-one years. For a considerable time he was engaged in newspaper work in Guelph and other cities.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, June 16.—The paper business continues good in all lines, and demand keeps up well. There are no price changes to record, and as a whole there have been few labor disturbances, considering the large number of plants in operation. It is true that the annual meeting of the Canadian Paper Trade Association, which was to have been held in Montreal next week, has been called off until a later date. This is owing to the tie-up that threatens transportation, and also owing to the industrial strike in Winnipeg, as a number of western members would be unable to attend. It is likely that the session will take place early in the fall.

There are several significant events pointing out the faith which the public has in pulp and paper enterprises, and the manner in which capitalists are looking to Canada in expanding into the greatest pulp and paper country in the world. One of the leading financial concerns, which has underwritten the securities of outstanding organizations, is advertising that the world must have paper, and that Canada is one of the few countries that can supply the demand; and that big industries drawing on the vast resources of the Dominion in timber and water power have been built up because of that demand.

Another favorable omen is that one large firm manufacturing high class papers, offering \$800,000 in six per cent, first mortgage bonds, and a prominent pulp producing concern offering a two million dollar issue of seven per cent, convertible, mortgage debenture stock, have had these issues oversubscribed, much before the allotted time expired. In fact, a large number of applications had to be refused.

Then the Canadian Pulp and Paper Association is very much awake, not only in the matter of adopting a registered trade mark to designate products made in the line of pulp, newsprint, book, writing and wrapping papers, but also in furnishing electrotypes cuts. Several members have already made arrangements to make use of the trade-mark, which is not intended to displace or do away with any private

trade marks, or water marks, now in use, but rather to supplement them and give individuality and nationality to the paper and pulp products of the Dominion. Then an extensive advertising campaign is about to be entered upon.

The Association has also been making representations to the Canadian Government to the effect that the necessary tonnage should be provided at once on conditions and under arrangements that will permit the Canadian pulp and paper industry to meet foreign competition and establish a permanent market abroad. It is understood that several companies have large export orders to fill as soon as tonnage is available. It is learned that word has been received from Ottawa to the effect that every reasonable effort is being put forth to the end desired, that vessels now owned by the government are to be operated by the Canadian National Railways, and that every practical assistance will be lent to the object in view.

The Canadian Members of the Waxed Paper Manufacturers' Association have entered upon an advertising campaign, presenting some timely and cogent facts in regard to the wrapping of bread. They state that, under present conditions of handling, bread is the "filthiest food consumed by the public," and the association believes that the citizens generally will heartily endorse and support any movement to protect the staff of life from contamination. It is pointed out that immediately prior to the war, regulations had been framed in Toronto to enforce the wrapping of all bread, but that enforcement had been precluded by the paper shortage which followed. It is also stated that the cost of wrapping a loaf of bread today, even with the higher cost of raw materials and labor, should be considerably below two cents or even one cent per single loaf. A wrapper can be bought for a twenty-four ounce loaf at approximately two-fifths of a cent each, and the labor charges for sealing the loaf with an automatic machine are three dollars per thousand loaves, making the total cost of labor and wrapper seven-tenths of a cent. It is also urged that it is not necessary to buy waxed paper in

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the United States, as there are a number of Canadian firms, who have been making waxed paper in the Dominion for the past ten years.

There is a scarcity of mixed rags in all the cities of the Dominion at present, due to various reasons. One of these is that the average householder is exercising every economy owing to the high price of fabrics and cloths of all kinds, and many costumes, gowns and suits are being made over in order to last as long as possible. Rag collectors report that they are able to pick up only limited quantities. Packers are very anxious for stock, as there is a good demand, but the supply is far short of meeting the requirements. Then, again, tailor rags, shoe clips, shirt cuttings, overall cuttings, hosiery cuttings, etc., are showing a decline in quantity. The ascending price of these materials makes cutters use up every scrap of material wherever possible. Every bit of stuff is employed to the most economical advantage, and the effect is seen in the lessened quantities which are offered dealers.

The market for sulphite pulp is all the time becoming more active, and the demand is gradually assuming normal proportions. Prices are holding firm, and each week sees some improvement in the situation. If export facilities were provided, there would be no stocks on hand at any of the mills. There is a moderate movement of ground wood, with prices unchanged.

In regard to the future prices on book and writing papers, there is every tendency in the direction of stronger quotations. It is not probable that any jump will take place until the fall, but it is bound to come. Labor costs are ascending all the while, hours of work are being shortened in accordance with the popular, not to say insistent demand, and with higher carriage charges and increasing overhead expenses, the mills must naturally, in the course of time, get more for their product.

While the market for pulpwood is rather dull at present, and most of the mills are pretty well supplied, there will be an increase in the price of wood this fall owing to the diminished quantities which are being taken out. Several firms in Northern Ontario, as well as many settlers, who have in the past been cutting extensively, have greatly curtailed operations by reason of the mills not fixing a price for the wood, and the companies not caring to get loaded up.

Men are still scarce in many sections, and whether the cut this fall will be larger or smaller than last, will depend very much on the industrial atmosphere, and whether labor becomes more contented, and the cost of living shows a tendency to increase or decrease. All plants in practically every line of paper production are well employed, and there will be business enough on hand to keep them actively in operation during the summer months. Jobbers report business as good, and all orders placed are on a sane, steady basis, there being an absence of the speculation or plunging, which characterized the trade a year ago last spring. Printers are well employed, and business on the whole is firm and the outlook good.

The only change recorded in quotations on pulp and paper is:

Sulphate pulp \$75.00 to \$80.00

NEW YORK MARKETS.

New York, June 14. Business in the various grades of paper continues to gain momentum, and the market this week has been equally as active as previously reported. Reports from mill sections are a unit in describing conditions as becoming increasingly favorable, and the average papermaking plant is now operating at greater capacity than at any time since the pre-armistice period. Consumers are actively in the market as purchasers, and are absorbing large amounts of paper, presumably having at last come to the realization that prices are fundamentally strong and that they will not profit by holding off in covering their wants. Jobbers in turn, experiencing a better demand from their customers, are acquiring confidence and are stocking up with more freedom than hitherto. Indications are that the improvement of the market is still in its infancy. Manufacturers and dealers anticipate an active and consistent demand throughout the summer months, and predictions are made that the forthcoming hot-weather season will be the most active experienced by the paper trade in many years. Emphasis is placed on the light holdings of users and jobbers, which in itself should greatly stimulate the demand, because of the fact that any increased consumption of paper must necessarily be almost immediately felt by dealers and producers.

Fine papers are moving in substantially larger volume. Consumers evidently are replenishing their depleted stocks, and are placing orders with freedom. Prices are strong, and, in many instances, tend firmly upward. Some mills, it is said, are so crowded with business that they have been compelled to withdraw quotations, being unwilling to book additional orders in view of conditions ruling in the raw material market.

The newsprint market is firm. Manufacturers are shipping their output as soon as it becomes available, and in a number of cases, orders are being refused. A strengthening factor in the newsprint market is the return of quite a number of publishers to the practice of accepting return copies of their papers. This results in larger editions and a greater consumption of paper. Prices on news are very firm, and indications are that some manufacturers are just on the point of advancing quotations. This applies especially to side runs, which are in light supply and very actively sought.

Wrapping papers are in better demand, although relatively there is possibly a lighter movement of coarse papers than of any other class. Consumers, however, are gradually increasing the volume of their orders, and it would seem that the improved retail business the country over must soon be creative of more demand for wrappings. The situation in book papers is extremely firm. The majority of mills are sold far ahead, and are reluctant to accept more business even in cases where buyers are willing to leave the question of price open. The activity in book papers is of course due to the boom in advertising, which necessitates publishers of magazines and other periodicals to print large editions and to seek extra supplies of paper to augment their contract shipments.

Demand for boards has increased to a slight extent this week. Most mills are still in search of business, however, and the board market is not as active as that for the various grades of paper. Boxmakers are apparently holding off in buying unless being in

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immediate need of supplies, and there is consequently not enough trade to be creative of a very strong price situation. Quotations are nevertheless maintained, and, in view of present labor and raw material conditions, any fluctuation is likely to be in an upward direction.

GROUND WOOD.—Moderate activity characterizes the market for mechanical pulp, and quotations remain at unaltered levels. Probably the strongest factor in the market at present are reports that Canadian grinders are shipping large quantities of ground wood to England. This, of course, means the elimination of just so much of the supply to consumers here, and while demand for the moment is such that this condition is not seriously felt, consumers seem to appreciate that later on it may prove a distressing factor. Eastern grinders quote from \$25 to \$27 per ton for spruce pulp of prime quality, with quotations to western consumers ranging a dollar or two lower, owing to the larger freights involved.

CHEMICAL PULP.—The market for chemical pulp is steadily growing more active. Paper manufacturers, experiencing a better demand for their own product, and repeatedly coming into the market for larger amounts of pulp, and leaders and importers report receiving inquiries for tomages which indicate that a good many consumers are commencing to buy ahead. Prices are firm, and the tendency in most cases is toward higher levels. Kraft pulp is comparatively slow of movement, and easy in price, but soda pulp and the several descriptions of sulphite are very firmly quoted. Newsprint sulphite of No. 1 qual-

ity is selling at \$65 to \$70 per ton at the producing mill, domestic easy bleaching at \$85 to \$90, and bleached sulphite at around \$110. Foreign grades are quotably firmer. Spot stocks are very nearly at the depletion stage, and importers declare they cannot bring pulp in from Scandinavia at anywhere near the prices at which pulp on the docks has recently been sold. Occasional transactions in spot supplies are reported, with the prices paid ranging between 7.50 and 8.00 cents on bleached sulphite, 1.00 to 4.50 cents on unbleached sulphite of No. 1 grade and 3.75 to 4.00 cents on kraft.

RAGS. A veritable boom exists in the rag market. Consumers are buying in good volume, and prices are advancing with marked rapidity. Viewing the situation from all angles, it would appear that the sharp rise in values has been caused more by the shortage of material than by any unusual demand from mills. Manufacturers are absorbing much larger lots than in a long time, yet they are buying conservatively and certainly the demand is not of sufficient proportions to warrant the excitement that prevails among dealers and packers. The latter, however, say they are having exceptional difficulty in replenishing stocks, with the result that they are demanding higher prices in every selling transaction, and are frequently refusing to do business at the figures bid by consumers. Repacked thirds and blues are now selling at around 4.50 cents a pound delivered mills, and judging from the inquiry for these rags, mills are not securing all the supply wanted. No. 1 repacked whites of choice grade are fetching as high as 8 to 9 cents from mills,

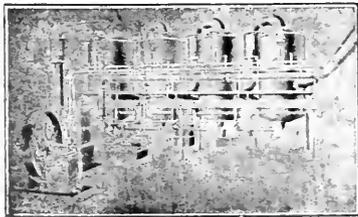
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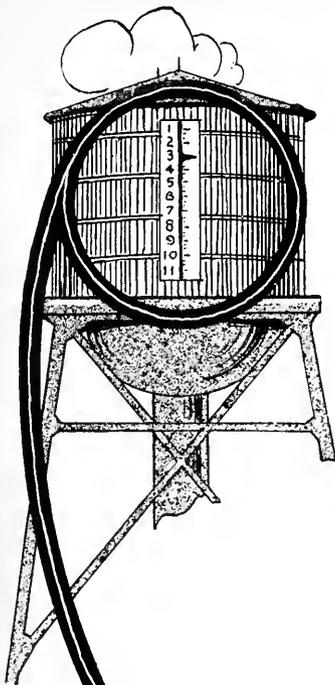
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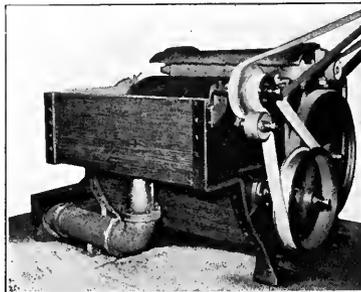
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although average quality packing is available at lower prices. Roofing rags are very firm and are gradually moving up in price. No. 1 packing has sold at 2.10 to 2.15 cents New York, while reports from the Middle West tell of sales to telmakers there at as much as 2.30 cents f.o.b. shipping point. New cuttings are actively sought and strongly quoted. White shirt cuttings of No. 1 grade have sold at 43 cents a pound at the mill, while fancy shirt cuttings, blue overall cuttings, cotton flannels, muslins and other grades are moving freely and at high prices.

PAPER STOCK. The high grades of old paper are in fairly good demand, and all kinds of book stock are actively sought, but those descriptions used by board mills continue rather quiet. Prices are firm, practically without exception, however, and advances have been noted in several instances. Books and magazines are selling freely at 1.70 to 1.75 cents f.o.b. New York, with sales of special packing at higher figures reported. No. 1 soft white shavings are quotable at 3 cents New York, and No. 1 hard whites at 4 cents. Flat folded newspapers are selling at 50 to 55 cents per hundred pounds, while No. 1 mixed paper is moving to mills at 10 to 15 cents.

BAGGING AND ROPE.—A slightly firmer market prevails for scrap bagging, and sales to manufacturers are reported at 2.15 to 2.25 cents a pound f.o.b. New York for No. 1 packing. Roofing bagging is moving freely at around 1.75 cents New York. Old rope is notably firm, and in fairly good demand. No. 1 Manila rope is quoted at 1.50 to 1.75 cents a pound at the point of shipment, with most sellers insistent for the higher figure.

ANOTHER ENGLISH PAPER BUYER VISITS CANADA.

W. A. Dewsnap, London, England, who represents Davies & Royle, prominent paper agents of the Old Country, spent a few days in Toronto this week calling upon representative members of the trade. He was making diligent inquiry for paper for export, and was particularly anxious to secure a considerable amount of kraft.

During the war Mr. Dewsnap reports that wrapping paper was exceptionally scarce, and many shoppers in London had to carry their goods home unsealed, or else provide their own paper. Some resorted to baskets, and others to boxes, and thus managed to carry a wide range of purchases all at one time.

The paper industry was then controlled by the Government, and prices in some lines rose very high. There is a splendid demand at the present time in the Old Country for Canadian pulp and paper products, according to Mr. Dewsnap, who believes that Canada is in a position to deliver the goods, and if the price and quality are right, there is no doubt that Canadian manufacturers will get the business. All things considered there is a disposition on the part of Old Country importers to favor the Overseas Dominions in view of the heroic part played by them during the war in the struggle for liberty, freedom and civilization. After visiting a number of manufacturers in Toronto, Mr. Dewsnap left for New York.

A. L. Dawe expects to leave for England about June 28.

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KRON AUTOMATIC DIAL SCALES IN CANADA.

"We have received the largest order ever given in Canada for automatic direct reading dial scales from the Laurentide Co., Ltd., Grand Mere," Mr. G. H. Smith, Secretary of the Canadian Kron Scale Co., Montreal, informed our representative a day or two ago. "With the immense development of the pulp and paper industry now going on in Canada," Mr. Smith said, "come more scientific and economical methods of weighing and the pulp and paper firms with huge output can no more neglect the modern scientific scale than they can neglect keeping an accurate account of their overhead."

The last two decades have seen the evolution of the beam scale into the springless direct reading dial scale, and while 90% of business concerns weighing heavy



weights still cling to the beam scale of a century ago, modern business men begin to realize the value of direct reading automatic scales, capable of handling loads of thousands of pounds, thereby eliminating the factor of human error, and making weighing departments 100% efficient.

Another feature, as pointed out by Mr. Smith, is the export trade, and the immediate necessity of kilogram graduation, on foreign shipments. The Kron scale carries on all dials, when required, both pounds and kilogram graduations. Seven scales of the type illustrated make up the order for the Laurentide Co., Ltd.

It is interesting to note that the Kron scale is the work of the brain of a Canadian inventor, E. H. Barrett, of Belleville, Ont.

NEW FELT FACTORY FOR THE DOMINION.

Porrits & Spencer, of Bury, England, intend establishing a branch factory in Canada, and will spend \$600,000 in connection with the erection and equipment of the plant. The industry will be located in Hamilton where the production of felt for paper machine clothing will be entered upon. It is believed that the expansion of the enterprise will be commensurate with the rapid growth of the pulp and paper industry in the Dominion. Up to the present production along the felt line has been carried on only on a small scale industry will be another strong factor in the progress of Hamilton. John K. Spencer is the representative for the Company in the Dominion and the Canadian organization will be known as the Canadian Porrits & Spencer Co., with an authorized capital stock of \$1,000,000. The English company has a wide export connection and the point was reached recently where it was deemed advisable to launch a branch plant in the Dominion to take care of the requirements here so

far as paper machine felts are concerned and also those of Argentine, Japan and other paper making companies.

Construction work on the new factory will be begun next month. The main building will be 1,000 feet in length and 100 feet wide and in addition there will be built a four story administration structure. Besides the manufacture of felt for paper making machines, the company will turn out woollen blankets and other heavy woollen goods. Wm. Spencer, managing director of Porrits & Spencer, will probably have charge of the Canadian plant which will eventually employ 500 hands. A site of 7½ acres has been selected in Hamilton on property formerly owned by the Canadian Machinery Corporation.

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THE GRILEY-UNKLE PULP EXTRACTOR.

A new piece of apparatus has been installed in the basement of Nos. 3 and 4 machines at the Laurentide plant, and attached to the broke-beater there. It is expected that this attachment will increase the efficiency of the beater about 200 per cent.

This apparatus is known as the Griley & Unkle Pulp Extractor, and is nothing more than an improved design of hood which extracts the finished beaten stock from the broke. The construction of this machine is very simple, indeed. It consists of rows of 1 1/4 inch holes bored into the front of the beater hood, and extend across the entire front of the hood. They are kept from becoming plugged up by the action of a series of wipers on the discharge side which continually pass over these holes from one side of the hood to the other. The wipers are operated by means of a crank driven by a pulley attached to the main shaft of the broke beater.

The action of this extractor is that the beaten broke is thrown against the hood at the top by the revolving roll with a force great enough to cause it to pass over the rows of 1 1/4 inch holes. These rows of holes must be bored in the hood far enough down so that the movement over the holes is tangential rather than radial or normal to the surface of the hood; otherwise the broke would be thrown through the holes and the desired effect would not be obtained. By this movement the contents of the beater in passing over the holes is subjected to a sort of skimming action causing the finer stock to be discharged and the coarse and flaky broke to be passed again through the beater. The discharge of finished stock is caught in a trough and passes on its way by gravity.

The skimming action is continuous, making it necessary for white water and broke to be fed to the beater constantly and thereby converting the beater into a type of continuous beater. It is expected that this extractor will increase the output of the beater from about 10 to 30 tons per day, thereby more than offsetting the operation of the attached Jordan which was installed to ensure correctly refined stock and accuracy of operation.

The Extractor and Jordan were installed by Mr. Riche, of the Griley Unkle Eng. Co. He was ably assisted by Dan Gaudet.

FAILURE OF GERMAN COMPULSORY HEALTH INSURANCE — A WAR REVELATION.

An address delivered by Frederick L. Hoffman at the Annual Meeting of the Association of Life Insurance Presidents, in New York City, December 6, 1918. After presenting his evidence, the author gives a brief summary of conclusions, in which he makes the following statements: "Instead of substantially improving the economic condition of German wage-earners, the benefits provided through social insurance were never adequate to meet more than the requirements of a minimum standard of life, the sickness rate among German wage-earners has not been reduced, but remains at a figure far above any corresponding conditions of ill health disclosed by impartial investigations in this country; the most lamentable consequence of social insurance in Germany has been the measurable lowering of the social and individual morality of the German people. The system in every direction has fostered dishonesty, deception, and dissimulation." Requests for copies of this pamphlet may be addressed to the National Safety Council.

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Pulp and Paper Magazine

OF CANADA

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J. NEWELL STEPHENSON, M.S., Editor.

The editor cordially invites readers to submit articles of practical interest which, on publication, will be paid for.

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EDITORIAL

WHY NOT BE FAIR?

Until within the last few months it may be safely said that there is hardly an industry in Canada or the United States which experienced less trouble in regard to labor conditions than the Pulp & Paper industry. In spite of the large number of men who gave up positions of importance and responsibility to serve in the allied armies those who remained carried on with a spirit that enabled the industry to furnish a product which was absolutely essential to the successful conduct of the war and in quantities larger than had ever been produced in the history of the industry. There was scarcely a single serious dispute because all were working in harmony for the accomplishment of a great end. The success of the cause for which the British Empire went to war was practically assured with the signing of the Armistice on the 11th of November. The continuation of important events and the beginning of reconstruction and readjustment continued to call for large quantities of pulp and paper products and the industry has been able to furnish them.

With the end of hostilities the men who have served with the colors have been coming back in increasing numbers and no paper mill or pulp mill has refused to give a former employee returning from the front as good, if not a better job, than the one he left. The returned men are going back to work with a most commendable spirit and will continue to make good in industrial life in the same conscientious way that they made good on the other side.

There seem to be, however, a certain number of dissatisfied ones who are bringing the fair reputation of labor conditions in the pulp and paper industry into disrepute. In the last few months there have been more strikes than in twice the number of years preceding. The pulp and paper industry has always attracted an intelligent class of men and requires a large percentage of skilled labor. The pulp and paper makers have unions as well managed as the organization of any other trade. Their officers are broad-minded men who seem to appreciate the advantage to all parties of maintaining our industries at such a capacity for production as will not only furnish employment for the men in the industry but will also bring in a revenue which will permit the payment of satisfactory wages. But there seems to have crept into a number of localities either a chronically dissatisfied element of labor or else there has been an advent in these communities of professional trouble makers.

The editor would like to have a personal word with the men who have been influenced by such agitation and been led to action which is not at all complimentary to the reputation of those engaged in our industry. In the first place I want to say that I have visited practically every pulp and paper centre in Canada and many in the United States and have found few, if any, localities where I could not settle down and be contented. A number of years of service in various departments of paper mills has impressed me with the interesting character of the work and with the feeling that any man might well decide to be a paper maker and expect to find enjoyment and satisfaction in the work. All of my mill experience has been in the manufacturing end and the wages I was satisfied to get, for the positions occupied, never exceeded the rate of \$2.00 per day, except for the short time that it was my privilege to substitute for a sick machine tender. Of course, the wages are much higher now. There were conditions in that mill that might have been improved, and which have been improved since, such as the old toilet over the tail race, reached by a tortuous journey around size tanks and necessitating a careful dodging of belts and shafting.

There was, however, except for an occasional bit of "grousing," no dissatisfaction among us workmen and in all the nineteen years that I have been personally acquainted with the men and management of that mill. I know of but one attempt at a strike and that was when a new employee started up the fuss among the rag room girls, and this was quickly settled. The management was always glad of suggestions for improving conditions.

There are, no doubt, in many mills, probably in most mills, conditions that can and should be improved. Such as sanitary arrangements, housing, hours of labor, wages, etc. In some cases no doubt, the management is not paying the highest wages that can be afforded. In other cases it is just as certain that the management is paying wages in excess of what is economically a sound policy, as dictated by present industrial conditions and the revenue of the business. A satisfactory adjustment of either class of problem cannot be expected when a portion of the workmen in a mill secretly organize and then descend as from an ambush on the management of the mill and make certain demands of whose nature the management is not made previously aware and consequently has had no opportunity to investigate or adjust. Where there is a real grievance a representative committee of employees, selected

for their common sense and fair dealing rather than for the degree of bitterness or their ability to hurl invectives, would in the vast majority of cases be heartily welcomed by the management of the mill and by an open discussion and investigation work out a sound and satisfactory solution of the problem. An instance of such action as mentioned in the Paper Makers' Journal for May. In this case the employees of a paper company, which owned the houses occupied by the workmen, and announced an increase of rents, complained. According to the organ of the International Brotherhood of Paper Makers, there was no rash throwing down of tools, but an orderly investigation was made by three arbitrators, one selected by the workmen tenants, another by the company and a third selected by these two and a satisfactory arrangement with benefits to both the company and the men was speedily arrived at.

In two recent instances this orderly procedure, which has always characterized the British fair-minded way of doing things has not been followed. In one case employees deliberately disregarded their agreement with the company and went on strike without notice and without an effort by friendly means to reach an adjustment. In the other case the organization was perfected and the immediate compliance with demands suddenly made was quite impossible. Without any apparent effort to solve the problem by the combined efforts of employers and employees the latter walked out. Such action in each case not only left the employer in the lurch, but also made it impossible for those not in the disaffected clique to continue remunerative labor, and enforced idleness is not a welcome condition in these days. It had a further effect of making impossible the production of material by the plant whose sale is, of course, the backbone of the pay envelope of the plant. I would not say that the men in these cases had no grievance. Perhaps they did. Undoubtedly there was some ground somewhere for its affection, but to strike without notice and especially when an agreement had been made that no strike should occur until every means of adjusting the difficulty had been exhausted is the most potent factor in inviting the disgust of the general public with methods of a certain class of organized labor and brings into disrepute the good work and honest endeavor of the great majority of the high minded, honest men who are striving to make labor union a factor for good in the industrial life of our country.

We all know that many employers have been exceedingly lax in discharging their duties to their workmen and have not lived up to their responsibilities, but this is no reason why workmen should organize in the dark and attack from behind, the men whose courage, thrift and ability, have provided for them a place to work. It is the duty, both of the

employer and of the employee, to work together in a conscientious effort to make working conditions better and to furnish the highest return that is economically possible and proper to the manufacturer for his investment of money, risk and ability, and to the workman for his investment of conscientious effort.

BON VOYAGE.

A. L. Dawe, Secretary of the Canadian Pulp and Paper Association, leaves Saturday, June 28, for England on the "Canada." Mr. Dawe is more than a trade digger. He is the ambassador of the Canadian pulp and paper industry. Back him up with good goods, better goods, the best goods, you can turn out. Then our "Bon Voyage" will mean something more than Good Luck.

Why not leave the "i" out of Fiume?

Unnecessarily high freight rates to foreign ports may be preventing Canadian companies from making connections that would result in a much greater and more uniform volume of future business when shipping will be in need of revenue.

THE SECOND MILE.

There is a strange fact about business that I have noticed many times.

It may be expressed in this apparently senseless phrase:

A little too much is just enough.

A young man came to me yesterday to tell me his boss had been fired.

I was sorry for the boss; glad for the young man; and glad for myself. It proved me, for once, a good prophet.

For the same young man had met me three months ago and complained of his lot. His boss was loafing on the job, he said, leaving all the work of the department to him. "He gets the money, and I do the work," the young man exclaimed. "What shall I do?"

I told him to do more work.

"But I'm doing so much already!" he cried.

"I know it," I said. "Do more. Do so much more that everybody in the office will notice it. Then see what happens."

Well, it happened. The boss is fired; and he has the boss's job.

I read a great deal of biography; it is my favorite kind of reading. And nothing impresses me so much as to see how hard the great men of the world have worked.

Almost without exception, they have done more work than they needed to do; more work than the average man would have been willing to do; more than enough.—Bruce Barton.

A Wisconsin paper company is said to be seriously considering the use of an airplane for passenger communication between its office and mill, 135 miles apart.

The Boss and His Men

By E. SIMONSON,
Practical Sulphite Expert.

In these days of unrest, it is interesting to read a few words from one who has had many years successful experience in operating pulp mills.—Ed.

The results obtained in a mill to a great extent depends on the relations between the boss and his men, especially since the boss has to lead and guide his men not only in regard to quality and quantity, but also in the saving of materials.

Everybody who has had charge of men surely realizes the great change which has taken place the last two or three years, and the change has come on such a big scale and so rapidly, that a boss in a pulp and paper mill especially, has almost lost his breath in wonder at what has taken place. We have had all we could do in order to follow events and concentrate our minds, during the present time of unrest among our men. It is more necessary now than ever for a boss to be qualified with good judgment in handling his men, to satisfy them, himself, and the company he represents.

As times have changed, we must take into consideration the spirit all around the world that has made our men more independent now than ever before. It is a fact, and the sooner we comprehend it the better. It is up to the boss to lead and guide this spirit among his men and if this changed spirit is led wisely, the results will be satisfactory to the men, the boss, and the company. Unwise leading will result in discord, and when discord comes in, neglect around the mill will follow.

If any boss, from the manager down to the tour boss, wants to have success in his work, the first thing he must do is to make himself acquainted with the spirit among his men in the mill, and in doing so, he must forget the old days. The idea of forgetting the old days may not be very favorably met but nevertheless, it must be done.

Every pulp and paper manufacturer to-day is, operating his mill on a very close margin. Raw materials and labor expenses are very high and the only salvation for a manufacturer is a wise and economical leadership. The boss must be qualified to teach his men economy and if we expect economy and good results in our mills, we must first of all introduce co-operation. We must teach our men in such ways as to make them interested in their work. Force is not the right way, you get more out of a man if you are handling the men the same way as you yourself would like to be handled. It is ignorance in a boss if he believes that he is supporting his company by showing up his dignity to his men always.

If a boss wants success in his mill, to his company's interest and also in his own interest, he must get acquainted with his men. He must learn to know a man's ways of doing things, his temperament, his knowledge about the work he is assigned to, and two very important things which should be studied more than anything else, namely, earnestness and interest in his work.

It does not take long for a boss to decide on a man's qualifications. Where knowledge about his work is concerned, this will soon show up, but to note

earnestness and interest in the work the men is assigned to may take a long while and should therefore be studied more than anything else.

If a boss should find a man dishonest and not interested in his work, it would be advisable to make a change. It would be a great benefit to the company and a great relief to such a man's surroundings. A boss should always keep in mind that bad example is contagious. We are all human beings and more or less inclined to influence.

If a man is careless in his work, it may be without his own knowledge and in such a case the boss should be fair and straight to him, and tell him about it in a straightforward way. Do not use hints, none of us like that, but just tell him the real truth about the wrong and the right ways of doing his work. If the man is not too strong headed the boss will find that not only he but everybody will have a loving (not fearing) respect for him, because that man and all the other men will know that the boss himself is honest and square, and if he treats his men openly and in an earnest way he will find harmony and loyalty to himself and the company he represents.

A boss must be able to give his men practical assistance, and if a boss is not in possession of this qualification he will be met with many difficulties, and it would be advisable for such a boss to take a course of training before he takes up a position as a leader of men. With more than thirty years experience in pulp and paper mills, especially sulphite mills, I have had a good chance to study the different ways of men, and one of the first things I have noticed when entering a mill was the test the men would like to put me to, namely, if I could give them practical assistance. I know of cases where I have been asked questions about things absolutely contrary to the subject, and that to the men's knowledge. In such a case it is absolutely necessary for a boss to be able to give practical answers, because if a boss does not know at least as much as his men, he is lost.

In closing up I would like to touch on a point which should be banished from the mind of a boss, that is, favoritism or what is called "Pets" in the mill. There is nothing that creates more trouble amongst our men in the mill than this. Jealousy and discord are the consequences, not to mention loss of activity and loss of faith to the boss and the man on which the special favoritism is bestowed. Therefore, let every man be the same to the boss, let them know what he wants, how he wants it. As long as he does not ask anything unreasonable, sees to it that it is done, and when the men get used to his ways they will look up to the boss with respect. Remember that 90 per cent. of the men are anxious to please and if the other 10 per cent. are handled right they will come the same way.

HOW TO LIVE.

Worry less, and work more.
Ride less, and walk more.
Drink less, and breathe more.
Waste less, and save more.
Preach less, and do more.

AN IDEAL LOCAL COUNCIL PROGRAM.

Adapted from address by Fred M. Rosseland, President, Chicago Safety Council, at Seventh Annual Safety Congress.

The territory of the Local Council will be carefully divided into districts with a chairman and committee for each. The work in all districts should be the same, except as local conditions may indicate a definite change and should be divided in three parts, (1) Industrial Safety; (2) Public Safety; (3) Home Safety. Industrial Safety will receive first consideration, of course, and efforts should be directed in five different channels: (1) Safety rallies for workers; (2) instruction classes for safety supervisors; (3) inspirational meetings for foremen and superintendents; (4) monthly safety dinners for executives; (5) the investigation of unusual industrial accidents. The safety rallies should be held at least once every four or five weeks, should be opened at scheduled time and, if held in the evening, should close at 9.30 or not later than 9.45. They may be held indoors or out-of-doors; may consist entirely of moving pictures or include moving pictures as part of a program. These meetings are principally inspirational and are of definite value to the plant safety supervisors. The meetings should not be held too frequently, nor should they ever be given without an attractive program.

Instruction for safety supervisors should be given, using the course of fifteen lessons prepared by the National Safety Council. In this course a definite plan is followed and certain subjects are covered thoroughly. The classes will be interesting to safety inspectors, safety engineers, managers of safety departments, as well as some superintendents and plant managers. This course is a direct service to the students and to their employers, and will result in definitely raising the standards of the safety work in the communities. The class meetings should be held once a week at a central location.

Inspirational meetings should be held once a month for foremen and superintendents. Admission should be by ticket and the program should be followed in a businesslike manner. It should consist of two (or not more than three) addresses by leaders in Accident Prevention on subjects relating directly to the work of those in the audience. It is desirable to conclude these meetings with a safety movie, if one is available. At intervals a Round Table meeting should be held, planned in advance so that there will not be a dull moment.

The monthly safety dinners for executives are really semi-banquets and every effort should be made to have the higher executives of the plants in the community attend. The speakers should in every case be prominent men and a formal program should be followed. These meetings form the one direct connection between the Local Council and the executives of the member companies, and will result in constant support for the plant safety departments.

The investigation of unusual industrial accidents is a very important phase of the work, one which must be handled with diplomacy and expedition. The sole object is to develop any lesson that may be drawn from the accident so that the members may take steps to prevent a similar accident in their own plants. The Information Bureau of the National Safety Council will be helpful in developing such plans. Great care must be taken to avoid conflicting with States and Insurance Companies' Inspection Departments.

Public Safety Work should be handled by a committee composed of prominent men, headed by the strongest business man it is possible to interest. The work will be largely through the municipal authorities and the influence of these men on the committee will be necessary in order to get results without loss of too much time. The work of the committee will include the securing of proper legislation, the proper instruction of the traffic police, the erection of the best known traffic signal stands, lessons in safety in the public schools, and safety meetings at regular intervals throughout the year in the various clubs, societies, and churches. This committee will also plan the observance of Fire and Accident Prevention Day each year.

Home Safety is probably the most difficult problem the Local Council will have to handle, and it will secure the quickest results through the newspapers and public schools. The local fire inspection agencies (municipal or state) and the Coroner's office will cooperate if the work of the Local Council is tactfully called to their attention. Two or three times a year the subject will be presented to the improvement clubs, women's club, and social centres.

In general the Local Council should care for the safety (both industrial and public) of every individual in the community or communities in its territory. To do this work properly with due regard for economy of time and money the services of a permanent safety engineer secretary are required. The activities outlined in the foregoing as well as others* are entirely practicable and the need for the work is great. Business men recognize the need for the work and once it is demonstrated to them that "you will deliver the goods" the necessary financial support will be forthcoming.—Bulletin, National Safety Council.

*Including the perfecting of plenty safety organizations, expert advice concerning the guarding of machines and dangerous plant conditions and similar consultative privileges for members. Secretaries also conduct plant safety meetings, providing entire program and moving pictures—all without extra charge or at absolute cost, if extras are necessary. Members have an expert consulting safety engineer at their service for the price of a membership in the Local Council.

NEW TITLE OF METHODIST BOOK ROOM.

Rev. S. W. Fallis, late of Calgary, has entered upon his new duties as Book Steward of the Methodist Book and Publishing House, Toronto, succeeding Rev. Dr. Wm. Briggs, who filled the position most acceptably for forty years. No longer will the name "William Briggs" be used for copyright purposes by the Methodist Book Room. "Ryerson Press" will be the style used instead. The name "Methodist Book Room" will be adhered to as a business title, but for other purposes "Ryerson Press" will prevail. The Methodist Church has invested some \$800,000 in the equipment of the Methodist Book Room, and the new Book Steward told the Toronto Conference last week that the investors must be protected. He would not stand for wages to be kept down in order to produce profits for church funds. It is understood that the subscription prices of the publications of the church will be increased in view of the high cost of paper, labor and other expenditures.

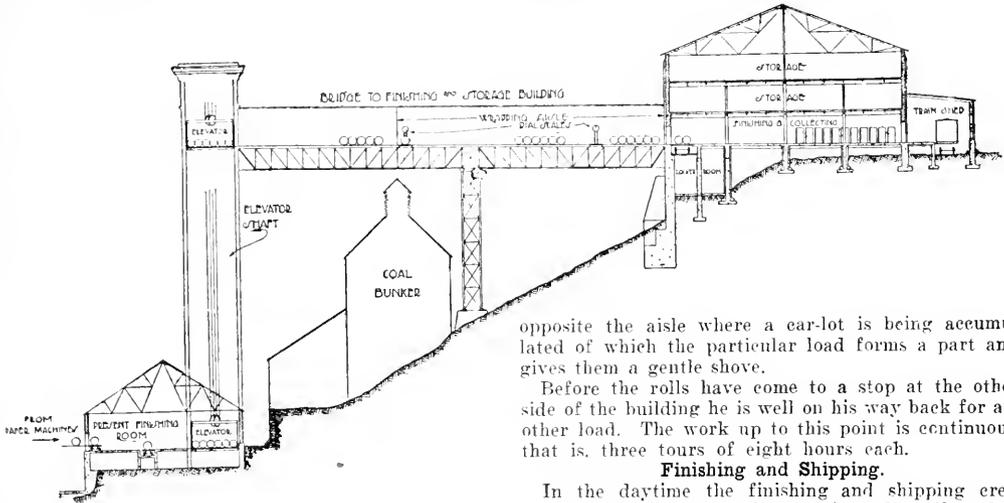
New Finishing, Storage and Shipping Facilities

The Laurentide Company is building this summer a new finishing and storage building and elevators which will be connected with the present buildings on the lower level. The ground floor will be used for "finishing," and the collection of outgoing material in carlots to facilitate proper loading of cars. The second and third stories will be for storage only, able to hold eight to ten thousand tons of paper in various forms. This brief description of the routing of a roll of newspaper from the machines to the cars will be more easily understood if its various movements are followed, as shown by the accompanying sketch.

Transportation.

Newsprint rolls, after inspection, will be collected from the platforms at the rear of the winders by a storage battery truck, and delivered to a rollway in

figures.) The rolls are weighed and finished in lots of six of the same size. After the scaleman completes the weighing of a lot a finisher and helper select the proper width wrapper from a rack supported over the rolls just on front of production scales and put on the inside bands and body wrapper. Then the outside bands are placed around the ends of rolls. By this time the first roll has reached a floor stop in front of second dial scale. The weigher and helper now weigh each roll again and paste on the labels carrying the necessary information regarding order number, size, weight, etc. The rolls are now ready to be distributed by an electric car which runs on a track length-wise of the finishing building just inside the wall. The pitch of the floors of the bridge and finishing buildings is such that it is only necessary to start a roll for it to continue rolling until



front of each of the two new elevators, each capable of taking 6-90", or 12-45" rolls on their sides per trip. These rollways and the elevator floors being on an incline the elevator operator will release the proper number of rolls for a load. The elevator now being loaded by gravity the operator will take the car to the top of the shaft.

Wrapping Aisles and Bridge to Finishing and Storage Building.

From the top of the elevator shaft a steel bridge inclosed by hollow tile connects with the ground floor of the finishing building, which is called the finishing floor. This bridge is about 31 feet wide and 170 feet long, the last 90 feet of which is utilized as wrapping aisles. The rolls of paper come off each elevator and roll down the inclined floor of the bridge to a floor stop in front of the first dial scale here the scaleman and assistant weighs and marks the numbers on the rolls, and the weight and other information on a card representing a roll. (This card follows the roll on its successive stages to the car and is used for the computation of the production stopped. The operator merely stops the electric car

opposite the aisle where a car-lot is being accumulated of which the particular load forms a part and gives them a gentle shove.

Before the rolls have come to a stop at the other side of the building he is well on his way back for another load. The work up to this point is continuous, that is, three tours of eight hours each.

Finishing and Shipping.

In the daytime the finishing and shipping crew come in, finding rows of newsprint rolls collected in car-lots, weighed and labelled ready to stand on end, and put on the finishing heads to seal the end wrapper. This up-ending is to be done by a special electrically operated machine built by the International Equipment Company, along lines suggested by Laurentide engineers. The inclosed train shed is designed to house six cars which will be so placed that they appear opposite the nearest door to the aisle in which their intended load is collected. On account of the short haul necessary by this arrangement, ordinary two-wheeled paper trucks will be used to transfer the rolls to the cars. The average trucking distance will be not over 60 feet from the car door, the building being 92 feet wide by 280 feet long. An electric hoist running on an I beam lengthwise of the shipping platform will be used to lift small rolls on to a gangway for the second tier of rolls in the car. A valuable innovation is to have a water pipe so arranged that the roofs of the cars may be tested for leaks. The building will be equipped with one, and possibly two, elevators communicating with the second and third stories so that paper may be handled to and from storage by the regular shipping crew.

Newsprint Review for May

The following is a review of the reports received by the Federal Trade Commission from domestic manufacturers of newsprint paper, from jobbers buying and selling newsprint paper and from leading publishers using newsprint paper. Import and export figures of the Department of Commerce are also included in the review. Whenever possible the figures for 1919 are compared with those for the corresponding period of 1918.

The figures which follow give the tonnage of the first five months of 1919 compared with the corresponding months of 1918.

	Stock on hand	1st of month.	Production.	Shipments.	Stock on hand end of month.
Total 1919 5 months	19,408	556,215	548,569	27,084	
Total 1918 5 months	31,713	527,626	533,217	26,122	

On account of strikes in the mills production for May fell off several thousand tons. The average production based upon the weekly and monthly reports for the 12 months' period ended March 31, 1919, amounted to 109,876 tons of total print and 99,632 tons of standard news, whereas the actual production was only 105,819 tons of total print and 96,192 tons of standard news.

Mil stocks of both standard news and total print decreased several thousand tons during May, 1919.

In addition to the stocks given above 1,538 tons were reported on hand at terminal and delivery points on May 31, 1919.

The total time the machines (179 in May) were idle increased from 5,781 hours in April to 16,577 hours in May. This extraordinary increase in lost time was due to strikes in the mills, which account for 14,693 hours; lack of orders account for 94 hours; repairs for 1,306 hours; lack of material 381 hours.

Imports and Exports.

The imports and exports in net tons of printing paper valued at not above 5 cents per pound (practically all newsprint) and of wood pulp for the month of April, 1919 as compared with the month of April, 1918, were as follows:

	April, 1919.	April, 1918.
	Net tons.	Net tons.
Imports of newsprint (total) all		
Canadian	44,427	58,865
Imports of newsprint (total)	8,356	6,835
Imports of groundwood pulp (total)	9,714	12,841
Imports of chemical wood pulp (total)	15,029	39,081
Unbleached sulphite	6,942	24,736
Bleached sulphite	556	1,039
Unbleached sulphate	7,310	13,306
Bleached sulphate	221	0
Exports of domestic wood pulp	3,044	329

The imports of newsprint for April, 1919, which were all from Canada were 14,438 tons less than for April, 1918. The exports for April, 1919, were 1,521 tons greater than for April, 1918.

Exports of newsprint for April, 1919, includes 2,258 tons to France, 311 tons to United Kingdom, 230 tons to Chile, 229 tons to Canada, 147 tons to Mexico, 134 tons to Uruguay, 1,822 tons to Brazil, 1,136 tons to Argentina, 861 tons to Cuba and 398 tons to Australia.

The imports of mechanically groundwood pulp for April, 1919, were 3,127 tons less than for April, 1918. The exports of domestic woodpulp were 2,715 tons greater than for April, 1918.

The imports of chemical wood pulp for April, 1919, were 24,052 tons less than the imports for April, 1918. The bulk of this tonnage was unbleached sulphite and sulphate from Canada. An interesting item is the import of 221 tons of bleached sulphate pulp.

Stocks of rolls in jobbers' hands increased slightly during the month of May, 1919. Stocks of sheets decreased.

Commitments reported in the month of May, 1919, to sell roll news were 8,939 tons greater than commitments to buy.

Commitments reported in the month of May, 1919, to sell sheet news were 912 tons less than commitments to buy.

Monthly tonnage report from 715 of the most important newspaper publishing concerns and associations in the United States show a decrease of 12,824 tons in publishers' stocks during the period. Seventy publishing concerns held about 64 per cent. of the total stocks at the end of the month.

Prices Paid by Publishers.

The weighted average contract price paid by publishers during May, 1919, f.o.b. mill in carload lots for standard news in rolls from domestic mills was \$3.49 per 100 pounds. This weighted average is based upon the total tonnage of 150 contracts involving more than one million tons of paper manufactured in the United States. These contracts, most of which extend until December 31, 1919, include a few long-term contracts made prior to the war at very low prices. The majority of the contracts which cover the bulk of the tonnage are priced between \$3.50 and the price of \$3.7525 per 100 pounds fixed by the Federal Trade Commission.

The weighted average contract price of more than 69,000 tons of standard roll news in carload lots f.o.b. mill delivered to publishers in May, 1919, was \$3.69 per 100 pounds.

The weighted average contract price paid by domestic publishers during May, 1919, f.o.b. mill in carload lots for standard news in rolls from Canadian mills was \$3.598 per 100 pounds. This weighted average is based upon the total tonnage of more than 25 contracts involving almost 200,000 tons of Canadian paper. The greater number are short-term contracts covering the year 1919.

The weighted averaged market price of standard roll news in carload lots f.o.b. mill based upon purchases totalling more than 4,000 tons was \$3.689 per 100 pounds.

WISCONSIN'S OFFICIAL PULPWOOD SEALER.

A bill introduced in the Wisconsin legislature which provides for the creation of a State officer at a salary of \$2,500 annually to measure pulp wood at the mills. The bill is in response to the demands of sellers of pulp wood who assert that some mills scale the wood down to an amount equalling only about 50 per cent. of what was loaded. The bill provides that the State inspector shall have the power to appoint deputy sealers at all the mills, and that the mills shall pay 10 cents a car to defray the cost of sealing.

Secret Methods of Paper Making

At the Chicago Convention of the Paper Makers' Cost Association, Mr. J. R. Long, general superintendent of the Tarentum Paper Mills, Tarentum, Pa., who addressed the gathering on the "Value of Local Divisions Within the Cost Associations," introduced some humor within sound advices.

Mr. Long is an old-time papermaker and he prefaced an account of what it was hoped to accomplish through the organization of local associations with some humorous reminiscences of early experiences in mills where the secrets of manufacture were carefully guarded. He said, in part:

I suppose I am what would be termed an old-school papermaker, but I do not want to be classed as one who is unwilling to adopt new ideas and modern methods which have merit.

When I was a lad employed in a paper mill, a spirit of jealousy and secrecy seemed to dominate paper manufacturers, and I fear some of their descendants must be living to-day. Every mill guarded its processes sacredly, and visitors of the craft were perhaps as welcome as William Hohenzollern would be at this meeting.

In the old Elkhorn Mill, where it has been asserted rope paper bags were first manufactured in this country, I was employed as a helper, working near the rotary. Trade secrets were carefully guarded in our mill. The scales were placed in a locked case with an extended platform, and the steam gauge and pressure regulator were also in locked cases. A trusted employee who was supposed to possess more than ordinary intelligence and who received the munificent sum of \$1.25 a day, carried the secrets in his brain and the keys in his pocket. It was his duty when the rotary was filled to turn on the steam and when the "batch" was sufficiently cooked to turn off the steam, no matter at what hour of the day or night this cooking was completed. His hand was the only one trusted to accomplish the wonderful feat. It was also his duty to set the scales to weigh the correct amount, so inferior workmen might weigh sufficient lime, etc., without knowing the exact quantity.

One day this trusted and intelligent employee was seized with a violent toothache. He had a "batch" on cooking, and could not possibly leave it to go two miles to the nearest doctor (the doctors were the dentists of those days) to have the tooth extracted. The pain grew unbearable, and he determined to render first aid to himself. He took a strong cord from a new dryer felt, tied one end round the aching tooth, stopped the rotary and fastened the other end to one of the arches on the rotary-head. The cord was long enough to permit him to reach the shifter and start the rotary in motion. The tooth was well-rooted and the cord was stout, and with the start of the rotary the cord began to tighten, lifting our man, brains, keys and all, off his feet. He began to make sounds which we thought were calls for help, and when we arrived upon the scene, we saw him just ready to be drawn through the space between the coiling and the rotary. In this emergency, his great mind acted quickly. He braced himself with his hands against the ceiling, the tooth let go, and fell sixteen feet to the brick floor. We gathered him up with a broken leg and arm and carried him to his home. Next day, when he was just able to talk, he imparted to me, at the order of the superintendent, the secrets of paper-making, which

I am using to-day, and, gentlemen, I defy any of you to come to our mill and detect that we use eight pounds of lime to the hundred, and cook ten hours with twenty pounds steam pressure. And this is how I was initiated into the order of paper makers, but the other fellow received the brands.

Those of you who attended the Buffalo convention and there saw the Eastern Manufacturing Company's cost system exhibit can realize how conditions have changed. I distinctly remember some years ago that manufacturers declined to make public any information concerning their business, but to-day the reverse is true with the majority. Statistics are now compiled for exchange, and competitors are reaping equal advantages.

Our cost system was not elaborate. The simple rule was, "Double the price of raw materials equals the cost." I learned that many of the old mills using rags employed this method: "To double the cost of the rags per pound add two cents per pound, and the difference between that sum and the selling price is profit." These methods took no account whatever of the fluctuation of prices of supplies and labor.

Those were certainly primitive cost systems, but they were as trustworthy as those employed by some mills at the present time. One large paper manufacturing concern says they make their paper as cheaply as they can and sell it for all they can get, and by their books then determine the cost and profit. As they make many grades of paper, and as it would be impossible by this crude method to determine the grade upon which they were making an excessive profit or that upon which they were perhaps losing money, it is evident that such a system is unfair to the consumer, and to the mill dependent for profit upon a particular grade which is being sold by this large concern below actual cost.

Again, there are mills manufacturing certain grades of paper which have what is called "throw-outs." These are stored until there is a sufficient quantity to be run up in some special grade of paper—a by-product—which is sold regardless of the market price and thus the market is disturbed, and the manufacturer relying upon a similar product for his profit is injured.

As employees share to an extent in the profits of the manufacturer, it may be said that selling below cost is unfair alike to employee, consumer and competitor.

SERIOUS FOREST FIRES.

Quebec, June 19.—Serious forest fires are reported from the lower part of Matane Country. A saw mill belonging to Mr. J. A. Boulay, former member of the House of Commons for Rimouski, was burned to the ground. A number of box and flat cars and huge quantities of lumber were also destroyed. Reports this evening say the fires are still raging.

An easing up of the ocean shipping situation is expected about July 1. The inauguration of a ten-day schedule of sailings between Montreal and Havre will permit a more extensive movement of commodities to France, and the rates announced are somewhat lower than those to Great Britain.

The latest project to utilize wood waste the, the idea of using sawdust for soap.

EXPECTS PERIOD OF EXPANSION.

The Canadian industry, which is above all others in an unqualifiedly strong position is the pulp and paper one, says the April Review issued by McCuaig Bros. & Co. Our favorable export position in relation to the United States is of course, the important feature at the present time in this business, and there seems to be no reason why shipments abroad should not become more general once the shipping situation begins to get back to a pre-war basis.

The American market in itself is an enormous one and must continue to grow as that country increases in population. It must face the necessity of looking more and more to Canada for its supplies, as its own productive capacity decreases. With this big market right at our own door, there does not seem to be any question but of further development and increased output.

Conditions have been unsatisfactory in the extreme for the past few years, owing to war conditions and the price restrictions forced on the trade by the governments of both countries. Fresh enterprise has been kept at a low level but notwithstanding these drawbacks, steps are now on foot in several directions to increase production and once financial conditions are suitable for the incorporation of new companies, there should be a period of great expansion.

It is interesting to note that last year's exports of pulp and paper as well as of unmanufactured wood showed the greatest percentage of increase over 1917 of any of the leading groups of commodities, which figure prominently in the country's export trade. Pulp and paper rose 24.09 per cent., and manufactured wood 25.1 per cent. In connection with the latter it may be observed that steps are being taken to bring about the manufacture of more of our raw materials before their exportation.

The rapidly increasing demand for electric power in the Province of Quebec as the result of the establishment of new industrial enterprises is indicated by the announcement that further large water power undertakings will soon be established on the St. Maurice River.

The increased power made possible at the various sites on this river by the La Loutre reservoir, the largest but one, in the world, is a strong incentive to prospective power users. It is estimated that the conserved water thus made available represents a total increase of over 500,000 h.p.

The new development is in connection with the operations of the St. Maurice Paper Company, which has two sites in the lower portion of the river known as Les Forges and La Gabelle. The intention is to combine these two sites, giving a total effective head of 33 feet, while the regulated flow from the La Loutre reservoir increases the power now available at this site by 20,000 h.p., making a total production of 42,000 h.p.

Another proposition reported in this connection is the construction of a hydro-electric plant, using the combined sites of La Gabelle and Les Gres, the latter site being controlled by the Shawinigan Water & Power Company. The Shawinigan Co. will carry out the development, and supply hydro-electric power to the St. Maurice Paper Company under a special contract, \$3,688,982.

VANCOUVER SYMPATHETIC STRIKE.

Vancouver, June 13. — Owing to the persistent rumors which had been circulating for some time past regarding a sympathetic strike to take place the first of June, practically all the pulp manufacturing plants on the British Columbia Coast laid in supplies of all kinds sufficient to last them for several weeks. The result has been that, although there has been more or less inconvenience, real suffering has not been occasioned from the strike which is now taking place in Vancouver.

Thursday night, June 12, two passenger boats sailed for northern B. C. ports carrying fresh meat and vegetables and a large number of men for the different plants along the Coast.

The finished product from Ocean Falls is being shipped as usual as the most of this stuff is handled by U. S. steamers which touch at that point. This also applies to a certain extent to the product from Powell River. Taking it all in all there is only a nominal amount of inconvenience caused by the strike of the steamship companies.

THE WHALEN CO'S NEW OFFICIALS.

Since Sir George Bury arrived in Vancouver to take active management of the Whalen Co., he has made the following appointments: Mr. Henning Helin to the position of general superintendent of the company with headquarters at Vancouver. Mr. Helin assumed his duties on Monday, June 9th.

Mr. Helin is considered one of the best technical men in the pulp industry. Besides having served as technical director for the Wayagama Pulp and Paper Company, Mr. Helin is connected with Fibre Processes, Inc., and the Rainy River Pulp and Paper Co.

Mr. G. G. Davis is superintendent of logging operations with headquarters at Vancouver. Mr. Davis assumed his position on Monday, June 16th. The Davis raft is largely used by the company.

Sir George Bury is now on a tour of inspection of the company's properties along the Coast. He will return to Vancouver the latter part of the month.

AN EXHIBIT OF THE WAR USES OF PULP AND PAPER.

There is now in the rooms of the News Print Service Bureau, 18 E. 41st St., New York City, a collection of over 160 articles illustrating the war uses of pulp and paper in the United States and abroad. This is the exhibit referred to in the address of Mr. Durgin at the meeting of the News Print Service Bureau on May 13, 1919, and published in the Pulp and Paper Magazine, June 12 and 19.

The exhibit includes paper made for use in gas masks, TNT and powder containers, airplane wings, cartridge boxes, machine gun belts, hospital supplies and a very large number of paper textiles and fabrics of both Scandinavian and German manufacture.

The exhibit was prepared by the Bureau of Standards and the Bureau of Foreign and Domestic Commerce in Washington, and will be available at this address in New York for only a few weeks.

All who are interested in it are invited to call and examine the exhibit at their earliest convenience.

PHILIPPINE PAPER IMPORTS.

Recent statistics concerning the imports of paper and manufactures of paper into the Philippine Islands during the year 1918 show that they were valued at

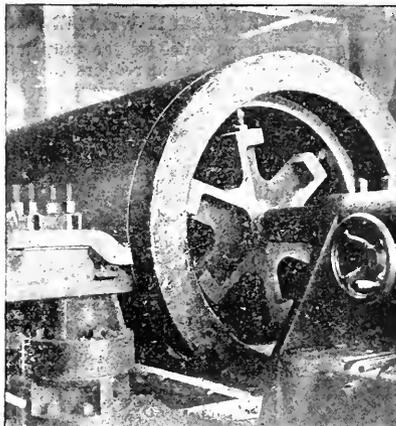
PAPER MEN VISIT HOME OF "BUFLOVAK."

Opportunity for technical and scientific observation was never more happily combined with delightful hospitality than on the afternoon of June 13th, when the Buffalo Foundry & Machine Company opened its large plant for the manufacturing of drying, evaporating and chemical machinery to the inspection of the members of the Technical Association of The Pulp & Paper Industry, with guests from Canada assembled in convention in the city of Buffalo.

Members of the Association, though generally familiar with the application of the company's products to the pulp and paper field, were scarcely prepared for the great variety of chemical machinery shown in all processes of manufacture, and displayed in such manner as to give a clear and comprehensive survey of design, construction and adaptability. The company has not rested its policy on the mere production of machinery; it has taken an advanced position in the industrial world by equipping and developing departments for scientifically adapting its machinery to the needs of the commercial life of the country, and this feature of the organization aroused an unusual interest among the delegates.

To assist the visitors in going through the plant, a souvenir booklet has been prepared, giving information concerning the plant and some of the apparatus under construction. Dryers, condensers, evaporators, hammers and crystallizers awaiting shipment were inspected, delegates entered the machine shop, which is so completely equipped for the machining and assembling of the heaviest chemical and drying machinery.

A large vacuum drum dryer having a drum 5' in dia. and 12' long being assembled on the floor of the shop was an immediate and carefully studied attraction. These dryers are used for drying sulphite liquors, securing to the pulp and paper industry a by-product that can be converted to many useful and profitable purposes. These dryers are capable of continuous operation, have a capacity of about 1,000 lbs. of dry sulphite waste per hour. They are built in various sizes, of which the dryer nearing completion was the largest type. This type of dryer has rendered



Cutting off Riser from a large drum casting.

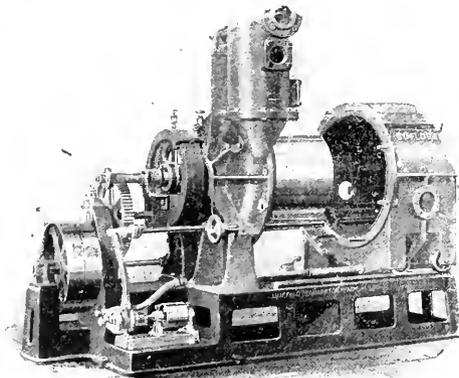
ed the unique service of enabling pulp mills to comply with the laws prohibiting the pollution of streams at an actual profit, for the cost of drying is extremely low, and the marketable uses of the dry waste increasingly numerous.

The members had an opportunity to inspect in the shop the machining and assembly of evaporators, retorts, shelf dryers, flaking machines, condensers, vacuum pumps, receivers, crystallizers, etc. In the foundry the visitors witnessed the pouring of many large castings.

Connected with the Research Department, are the mechanical testing laboratories in which are set up working units of various apparatus for making practical tests and demonstrations on customers' materials to determine the apparatus best adapted to their products. Of particular moment to the delegates was the actual demonstration of the evaporation and drying of sulphite waste, the first operation by the Rapid Circulation Type Evaporator, and the latter by a small Vacuum Drum Dryer.



Typical Foundry Scene. This shows how castings are poured on end with larger risers so as to produce a dense homogenous metal in the casting.



Vacuum Drum Dryer. The size used in the Research Laboratories for demonstrating the drying of sulphite waste and other products.

WHO'S WHO IN THE CANADIAN PAPER INDUSTRY.

GEORGE FREDERICK WHALEN.

With the growing importance of the pulp and paper industry in British Columbia readers of the Pulp & Paper Magazine of Canada will be interested in knowing more intimately one of the men who has been active in the growth of one of the largest pulp and paper organizations in Canada.

George Whalen is Vice-President and General Manager of the Whalen Pulp & Paper Mills, Limited, which is incorporated at \$13,500,000 for the manufacture of pulp and timber products. Their office is in the Merchants' Bank Building, Vancouver, B.C.

George Whalen, as he is more usually called, was born at Fort William, Ontario, November 13th, 1880, being the son of Joseph and Alice Whalen, and the brother of James Whalen, who is President of the concern. Mr. Whalen was educated in the public schools at Port Arthur, and on graduation entered the employ of the Ontario Bank of that place. For



two years he served as clerk in the timber camps of Port Arthur, and in 1902 undertook the business of contractor for taking out timber. After seven years' experience in this very essential department of the manufacture of pulp he accepted the position of Manager in charge of construction and operation of the sulphite mill at Mill Creek, B.C. Mr. Whalen filled this position from 1909 to 1917, when the Whalen Pulp & Paper Mills, Ltd., was organized, and he was elected Vice-President and General Manager.

Besides having the oversight of the mills at Mill Creek, Port Alice and Swanson Bay, Mr. Whalen has three sons and one daughter to occupy his attention. His wife was Mary Geraldine Doran, of Kingston, Ont. He is a member of several clubs in Vancouver, and especially enjoys out-door sports.

Spanish River issues are in process of being coordinated so as to eliminate confusion in the minds of the public.

FOREST FIRES RAVAGE NEW BRUNSWICK.

St. John, N.B., June 21.—Continued fine weather throughout the province for the greater part of the last month or two has made the outdoor world attractive, but it also has made the country dangerously dry, with the inevitable toll of forest fires as a result. Just as new fires were springing up in all directions a short time ago, a providentially heavy downpour of rain averted the danger, but everything was so dry that the destruction of a big lumber mill and its supplies of lumber occurred during the rainstorm. Since then dry weather has given the fires another opportunity. The most serious was at Kedgewick, where an entire village was wiped out, leaving many homeless people and doing damage to the extent of \$250,000.

14 Mills Wiped Out.

In recent weeks no less than fourteen lumber mills have been destroyed by fire, mostly in the northern part of the province. The annual occurrence of these fires, with the great loss not only in buildings and goods, but in the standing timber swept by the forest fires, shows how necessary is the policy of the Provincial Department of Mines and Lands which has been devoting more time and money to safeguarding the greatest provincial asset by the development of the forest protection service.

The recent decision that the government railways should be required to observe the same safeguards against the spreading of fire that have been required of privately owned roads, was a notable victory for the province and will play an important part in lessening the fire risk.

NEWFOUNDLAND FOREST FIRES.

St. John's Nfld., June 17.—Forest fires in various sections of Newfoundland have destroyed valuable tracts and threatened isolated settlements during the past week. Reports received to-day indicate that rainstorms have probably extinguished most of the fires, but it will be several days before the extent of damage to settlements can be learned.

FRASER VALLEY WANTS PULP MILL.

At the annual meeting of the Greater Vancouver and Lower Mainland Bureau, which was held at the Vancouver Board of Trade recently, the erection of a pulp mill in the Fraser Valley, in which will be used a large amount of small standing timber, was proposed as well as the seeding down of the logged-off lands in the valley. A number of enterprising citizens have been making inquiries about pulp manufacture, and the information which they have received, has been most promising. They have found that pulp wood sells in the east from \$8 to \$14 a cord, and after making all necessary allowances, the corresponding price in British Columbia would be a profitable one. By different processes it is now possible to convert any of the varieties of wood growing in the valley into pulp. The sulphite and mechanical process is useful for spruce and hemlock, the soda process for alder and other hardwoods, while the sulphate process will handle practically everything. Power and transportation are both plentiful and cheap, which would mean that a company could be started on low capitalization. The Forestry Department at Ottawa will be urged to make a complete survey of the Fraser Valley and report definitely on the feasibility of the proposition in all its phases.

UNITED STATES NOTES

A determined fight is being made by Wisconsin manufacturers against the Arnold bill, recently passed by the Wisconsin State Senate, which imposes increases in the income taxes to be paid by corporations by several hundred per cent. Paper manufacturers are actively engaging in the fight against the measure which representatives of manufacturers' organizations say provides for the levying of a tax that is almost confiscatory.

Through a statement from the officials of the Bryant Paper Company announcing that a ten per cent. pay increase had been authorized to its employees, it became known that wage readjustments affecting practically all of the paper workers in Kalamazoo, Michigan, will soon be in force. No such sweeping advance in pay has ever been recorded in the history of industrial Kalamazoo. Employees in the mill of the Bryant Company say that the raise came voluntarily and without any solicitation on their part. In all over 4,000 paper workers in Kalamazoo will be affected. The concerns who are expected to follow the lead of the Bryant Company in making wage readjustments are: The King Paper Company, the Kalamazoo Paper Company, the Rex Paper Company, the Kalamazoo Vegetable Parchment Company, the Monarch Paper Company, the Hawthorne Paper Company, the Standard Paper Company and the Western Board and Paper Company. The increase announced by the Bryant Company is 40 cents a day for male employees and 25 cents a day for female employees.

A discovery that is likely to help reduce the price of paper has been made as a result of experiments of the Forest Products Laboratory at the University of Wisconsin, demonstrating that second cut cotton linters may be made into high grade book, writing and blotting papers. It is said to have been practically shown that paper can be made much more cheaply from the raw material than from wood. The laboratory is now endeavoring to bring the discovery to the attention of the pulp and paper trade and of the producing cotton seed oil mills. Commercial pulp in trials and paper runs made at the Forest Products Laboratory indicate that the second cut linters and hull shavings can be pulped with decidedly less chemical and bleach consumption than wood, and that they are well suited for the production of high grade papers. The Forest Products Laboratory statement says that there is available for peace time requirements of the country a supply of over 700,000 bales for other uses than for which cotton linters were used in the past. This corresponds to a production of 175,000 tons per year, equivalent to a little less than 600 tons of raw materials per day. That the paper industry could absorb such a large tonnage is shown by the fact that in 1918 there were produced 849,000 tons of book paper and 268,000 tons of fine paper.

Appearing before the Ways and Means Committee of Congress last week, Dr. Charles H. Harty, former president of the American Chemical Society, declared in testimony at the dye hearing that it is his belief that German dyes are about to be poured into the United States under guise of being the product of

neutral countries. "A movement to get German dyes into this country is now under way," Dr. Harty told the committee. "The flood is about on us. When the president issues the proclamation of peace, if Congress has not enacted the licensing plan into law, there will be nothing between us and the flood of German and other dyes. The only thing standing between us and this flood is this committee, and unless you enact protecting legislation quickly we will have no protection. A licensing system is absolutely necessary to the development of an American dye and coal tar chemical industry." At the conclusion of the hearings there was a feeling of confidence among dye manufacturers that they had won their case and that the proposed import licensing plan would be put into law.

According to a report of the New York State Industrial Commission, the present average wage of 550,000 workers in 1648 New York State factories is \$22.23 a week, or 12 cents more than in April of this year. Wages are shown to have increased 75 per cent. since May, 1915.

WELL KNOWN PAPER MACHINE MAKER DEAD.

Richard Carlisle Tefft, President of The Sandy Hill Iron & Brass Works, died June 17th, at his summer home at Cleverdale, on Lake George, N.Y. Mr. Tefft was 58 years old, and had been president of the above corporation for the past 12 years.

ORDERS ONE RATE ON PAPER.

Freight rates on paper throughout trunk-line territory must be revised to make them conform to a definite and uniform basis, the Interstate Commerce Commission declared in deciding the case brought by the Michigan Paper Mills Traffic Association against the New York Central and other railroads seeking removal of alleged discrimination.

Defendants are allowed forty-five days to propose a revised schedule that will eliminate the inequalities disclosed by the evidence.

"It is definitely established," the commission said, "that many of the rates on paper in the East have been made by the carriers largely for the purpose of permitting mills on their lines to compete in certain markets with other mills more favorably located."

REDUCE OCEAN FREIGHTS.

New York, June 19.—The announcement by the United States Shipping Board of a further reduction in ocean freight rates, was received in the quarters where the new rates will apply with considerable satisfaction. In other shipping quarters there was some criticism of the announcement as there has been a growing feeling that the board should not touch the rate question.

This has been suggested by many shipowners as one of the conditions which the Government ought to eliminate in framing its future shipping policy. Some of the shipowners have already suggested that the law of supply and demand should be allowed to rule in this instance.



Technical Section



DISCUSS MILL LABORATORY.

The complete printed program for the summer meeting of the Technical Section will be sent out by the end of the week. The entire expense, by boat from Montreal to Chicoutimi and return, will be \$26.75, and from Quebec \$15.75. This includes berth and meals.

Payment should be by money order, made out to Canada Steamship Lines, and should be sent to the Secretary's office as early as possible, to insure satisfactory accommodation.

The program of business which will be carried out during the trip up the Saguenay, will include a paper on the Mill Laboratory—cost and accomplishments, and another on Export Packing. The papers will serve primarily as targets to shoot at in the discussion.

Mr. Dawe sails on Saturday on the "Canada." The office will be in the capable hands of Mr. Beck during his absence.

REVIEW OF RECENT LITERATURE.

A-14. Detection of soda and sulphite wood pulps in paper. R. Wasieky (Papierfabrikant, 1918, 16, 212-213). J.S.C.L., Vol. 38, No. 5. Pieces of the paper to be examined are boiled up once with a 0.2 per cent aqueous solution of gentian violet, allowed to remain in the liquid for 2 minutes, rinsed with 95 per cent alcohol, and steeped for two minutes in 95 per cent alcohol, containing 0.5 per cent hydrochloric acid. They are subsequently washed for fifteen minutes in 95 per cent alcohol, which is renewed once, and finally washed in water. Papers made of pure soda wood pulp lose the color entirely, whereas sulphite papers are stained a deep violet. Papers of mixed composition may be analyzed with an accuracy of about 5 per cent, by comparing them with known standards.—D. E. S.

B-4. The uses of wood. Wooden furniture and the place it fills. Hu Maxwell, Amer. For., Dec., 1918, p. 731. Review of furniture's place in human progress. Furniture represents the fourth largest wood-using industry of the United States, the total annual demand for wood in this line approximating 950,000,000 feet. Comparative use of hardwoods and softwoods, and of native and foreign timbers. Use of veneers.—C. L.

B-4. England's forests sacrificed to war. Can. For. Journal, Aug., 1918, p. 1827. Describes forestry operations in England.—C. L.

B-4. Some uses and abuses of our forests. Chas. E. Childsey, Amer. Lbrman., Oct. 12, 1918, p. 52. Discusses some aspects of the utilization of waste material from logging operations; early attempts at paper making; manufacture of charcoal, tar and turpentine; wood preservatives.—C. L.

B-9. Great timber wealth of South America. H. N. Whitford, Can. For. J., Aug., 1919, p. 1833.—Forest resources of Brazil. The Amazon forest can be regarded as the greatest reserve forest of the world. There are thousands of miles of navigable rivers and many more thousands that are driveable.—C. L.

B-0. French requirements of common woods and her colonial resources. (Les besoins de la France en bois communs et les ressources de nos forets coloniales.) E. L. Le Genie Civil, through Le Papier, 22, p. 100, 1919.—The French forest areas have been very seriously damaged by the war: 600,000 hectares (1 hectare = about 2½ acres), have been practically wiped out, and the remainder worked in a destructive manner owing to the stress of circumstances, which demanded speed at all costs. The French colonies can supply woods of every description, suitable for all purposes, and the forest areas (including those of Kamerun) are nearly 100 million hectares. A survey and classification of these resources has been started, and is well on its way to completion. Means are being taken to begin working these forests according to the most modern methods, using narrow gauge railways and tanks (which originated in South America for this kind of work).—A. P.-C.

C-8. Apparatus for the preparation of bamboo which is to be converted into paper pulp. (Appareil pour la preparation du bambou et autres matieres du meme genre, en vue d'en extraire de la pate a papier.) French patent No. 489,701, granted to J. L. Jardine, England, Le Papier, 22, p. 123, 1919. The patent covers an apparatus for the preparation of bamboo and other substances of a like nature which are to be converted into paper pulp, which comprises the following parts: means for carrying the stems through one or several pairs of crushers; a plow-shaped device which splits the crushed stems into two parts; a series of pairs of crushing and disintegrating rolls through which the split stems are passed; means for cutting the stems into pieces of suitable length when they have passed through the last crusher; and means for operating the various parts of the apparatus. One or more of the following parts may be added: (a) a brushing device composed of one or more brushing cylinders having the brushes inside; (b) pairs of grooved rolls, the width of the rolls being such as to admit the stems and the depth such that the latter are crushed longitudinally; (c) a plow-shaped device comprising on the one hand a knife parallel to the axes of the crusher rolls and half-way between the grooves, on the other several pieces of an inverted U-shape; (d) pairs of crushing and disintegrating rolls, each pair containing a smooth and a grooved roll, the position of the rolls being reversed in each successive pair.—A. P.-C.

E-4. High-grade (sulphite) paper pulp. T. Maruzawa, Jap., 31,941, Dec. 24, 1917.—The sulphite liquor used consists of 1.5-3 grams molecule of NH_4HSO_3 , and 1 gram molecule of H_2SO_3 . It is prepared by introducing SO_2 gas into an aqueous solution of NH_3 , NH_4CO_2 . The finely crushed initial material with 2.5 times its weight of the specified solution, is charged into a digester and heated by steam, directly or indirectly applied. The solution contains 2.5-6 sulfite as SO_2 . It is heated at about 100° for 2-3 hours, then at 130° for 8-10 hours, or at 140° for 4-5 hours, or at 150° for 2-3 hours, or for 160° for 1-1.5 hours.—(Chem. Abs.)

E-4. Pulp for use in manufacturing a stout paper. T. Maruzawa, Jap. addition, 31,941, Dec. 24, 1917.



Geo. Carruthers, "Charlie" Rhodes (alias Dusty), and Joe Brennan, looking into a Pierce-Arrow engine.



Arrival at Thorold. H. P. Carruth, past president T. A. P. P. I., passing corner. J. Stadler, chairman Technical Section, the man with the altitude.

—A bisulfite liquor is prepared consisting of 1 gram of NH_4HSO_3 , and 0.3 grams-molecule of soluble sulfite such as normal NH_4 , K, Na, or Mg sulfite. The liquors are made by passing SO_2 through an aqueous solution of NH_3 , $(\text{NH}_4)_2\text{CO}_3$, or basic NH_4 , K, Na, or Mg sulfite or carbonate may be added to a solution of NH_4HSO_3 . Wood chips, contained in a closed vessel, are heated to 110° for 2-3 hours, and the liquor is passed through them 2 to 5 times. The temperature is then raised to 180° . The specified liquor contained 2.5-5 per cent SO_2 .—(Chem. Abs.)

E-0. Discolored pulp. W. A. McCubbin. *Pulp & Paper*, 17, No. 20, p. 461 (1919).—The cause of poor color in sulphite pulp was traced in one instance to a fungus growth in the sap-wood.—R. C.

F-0. Soda pulp manufacture. E. Sutermeister. *Pulp & Paper*, 17, No. 13, p. 309 (1919).—From vertical digesters the charge is blown under full working pressure into steam separators, which act on the centrifuge principle. Attempts to use the steam so wasted have not been successful. From the separators the stock goes to washing pits where it is continuously washed, using first weak black liquor, then pure water. Washings above about 5° Be are sent to the recovery plant, while those weaker are used to wash other cooks. Delays in washing greatly increase bleach consumption. Sometimes the color of the wash liquor is used as a measure of the progress of the washing. Owing to the great variety of materials contained, by-product utilization of black liquor is not yet successful.—R. C.



At Beaver Board mill. Dan Daverin and T. A. Weldon in foreground—and shirt sleeves.

M-0. A combined CO_2 and flue-gas temperature recorder. (*Pertes de chaleur dans les cheminées*). La Metallurgie, through *Le Papier*, 22, p. 117, 1919.—In this new apparatus, due to Mr. Chopin, the difference in temperature between the air going in and coming out of the furnace, and the percentage of CO_2 in the flue-gases are measured by electric currents whose strength depends on these 2 variables. The currents are produced by thermo-electric couples. Use is made of the difference in resistance of equivalent solutions of NaOH and Na_2CO_3 . The accuracy is sufficient for industrial purposes.—A. P.-C.

P-0. Safety for the household. VI. Hazards arising from the use of chemicals. Bur. Standards, circ. 75, p. 109-17 (1918).—This circular discusses, first, the dangers from materials in common use without thought of risk, since they in themselves are harmless, and in some cases are necessary for existence. The contamination of the water supply by means of Pb or bacteria or the formation of ptomaines in food are examples. It then considers the dangers from materials of unknown or not generally known properties, and composition in more or less restricted use, such as the use of rodent poisons, disinfecting and fumigating materials, or the careless storage or use of dangerous chemicals such as caustic soda or corrosive sublimate.—(Chem. Abs.)

R-5. Paper and paper stock imports and exports of the United States.—The *Paper Mill*, 42, No. 16, p. 23, (1919).—R. C.



No, this is not Mutt and Jeff. It is T. J. Keenan and P. Byrne.

PULP AND PAPER NEWS



Fire broke out in a pile of papers on the roof of the building of the Gibson Printing Co., Richmond St., Toronto, recently, but was extinguished before any large amount of damage was done.

Buntin, Reid Co., wholesale paper dealers, Toronto, have adopted the most modern means of delivery, and have purchased a ton and a half motor truck.

The many friends of Fred Maughan, of Barber-Ellis, Limited, Toronto, will sympathize with him in the death of his father, John W. Maughan, which occurred recently at Port Carling, Muskoka, in his 71st year. He was for many years connected with the Toronto Assessment Department, and was a brother of Mrs. Ellis, wife of J. F. Ellis, of Barber-Ellis, and President of the Canadian Paper Trade Association.

At the annual meeting of the Book Publishers Section of the Toronto Board of Trade, held recently, Henry Brophy was elected Chairman; George J. McLeod, Vice-Chairman, and F. G. Morley, Secretary-Treasurer. The Executive Committee is composed of Thomas Allen, S. B. Gundy, D. T. McAnish, J. McClelland and Frank Wise.

R. D. Warren, who for twelve years was business manager of the Canadian Baptist, Toronto, and for the last two years has been editor of the Pioneer, the organ of the Dominion Alliance, has been appointed denominational treasurer of the Baptist Church. He will still retain his position as chairman of the publication committee of the Ontario branch of the Dominion Alliance.

William L. Argue, circulation manager of the Toronto Star, was elected Vice-President of the International Circulation Managers' Association, which held its 21st annual meeting in Buffalo last week. The next convention will be held in St. Louis.

In a few weeks the manufacture of soda ash will be begun at the large plant of the Brunner-Mond Co. at Amherstburg, Ont. The plant has cost in the neighborhood of two million dollars, and when in full blast will employ some five hundred men. The protection guaranteed to soda ash manufacturers by the Federal Parliament is declared to be sufficient to warrant production on a capacity scale.

George R. Gray, who for many years has been manager of woods operations of the Spanish River Pulp and Paper Mills, with headquarters at Sault Ste. Marie, has been elected a director of the company in succession of the late Benj. Tooke, of Montreal. Mr. Gray is well known in pulp and paper circles.

At the annual meeting of the Canadian Credit Men's Association, which was held in Toronto last week, A. G. Parker, secretary-treasurer of W. J. Gage & Co., Limited, manufacturing stationers and publishers, Toronto, was elected President of the Association.

London Shipping Containers, Limited, of London, Ont., who recently obtained a provincial charter, have succeeded the London Shipping Container Co., who manufacture corrugated and fibre containers, as well as paper barrels and pails. Their plant is located

at the corner of Rectory St. and Grand Trunk tracks in London, and Thomas H. Lacey, is the President of the company, the other members of which are G. W. Stephenson and R. L. Stephenson.

W. H. Sherriff, of the Hodge-Sheriff Paper Co., Toronto, recently returned from an extended business trip throughout the Canadian Western provinces, in the interest of the firm.

A. P. Costigane, secretary and safety engineer of the Ontario Pulp and Paper Makers' Safety Association, Toronto, left this week on an extended tour of the paper mills of Northern and Northwestern Ontario, where Safety rallies will be held. Mr. Costigane will visit Sault Ste. Marie, Espanola, Sturgeon Falls, Port Arthur, Dryden and Fort Frances. Two safety film pictures entitled "The House that Jack Built," and "Careless America," which have kindly been loaned by the National Safety Council of America, will be shown.

E. A. Crippen, of Toronto, who represents several leading American paper mills, has purchased a fine bungalow at 1 Wellwood Ave., Toronto, and has moved into his new home.

Another trade publication has been launched in Toronto in the Phonograph Journal of Canada, which is published by the Fullerton Publishing Co., 66-68 West Dundas St. The Journal will be issued monthly, and the initial edition is a very creditable production.

George E. Challes, sales manager of the Riordon Pulp and Paper Co., has sold his home at 249 Rusholme Road, Toronto, where he has resided for many years, and, along with Mrs. Challes and family, has taken apartments at the Hotel Elliott, Toronto, for the summer.

It is announced that there will not likely be any reorganization of the officers of the Kinleith Paper Mills, of which the late W. P. Gundy, of Toronto, was President, until the next annual meeting. The other officers of the company will look after the interests of the mills. The company is very busy at the present time, and have orders ahead for several weeks.

At the annual meeting of the Pacific-Burt Co., Limited, which was held in Toronto last week, S. J. Moore was re-elected president and the old board of directors was reappointed for the coming year.

William Cairnie, who has been boss finisher at the Jonquiere Mill of Price Bros. & Co., has taken a position in Philadelphia. On the eve of his departure a small dance was held in his honor and John Ball, on behalf of his friends, presented Mr. Cairnie with a handsome travelling bag.

The Labor Gazette says the one pulp and paper mill strike in April resulted in a loss of 1,980 days' work by 180 employees at Fairville (St. John), N.B. We wonder if anybody got any good out of it.



The Markets

CANADIAN TRADE CONDITIONS.

Toronto, June 23.—Business with the paper mills continues good and the jobbers have the same reports to make for the past month. Some declare they have never done as large a turnover as in June during the past three or four weeks. Deliveries have been particularly good and things are moving along satisfactorily. The strength of paper stocks on the stock markets is a good indication of the future of the industry and the lead of the Laurentide has been followed by other companies. There is every indication that shipping facilities will improve from this out and the feeling is hopeful in regard to the export business. While carriage rates are still very high there is a tendency toward reduction. With each succeeding week it is reported that more and more steamship space will become available and thus large amounts of pulp stocks which have been awaiting transportation for months, will be moved.

In this connection it is interesting to note a recent report from A. E. Ryan, Canadian Trade Commissioner to Japan, who says that of the 64,443,405 pounds of pulp imported into the Flowery Kingdom during 1918, Canada sent direct some 40,422,800 pounds, while it is to be presumed that a good quantity of that coming from the United States exporters was of Canadian origin. Mr. Ryan states that he was lately down at the Yokohama Customs quays where he noticed half a large warehouse full of Canadian pulp, but which had been exported by an American firm in New York. He thinks that it would help considerably to build up Canadian trade and also to establish Canadian prestige in the Japanese markets, if Canadian manufacturers would ship their goods direct through a Canadian organization entirely. Incidentally it might be mentioned here is a good chance for exporters to make use of the new registered trade-mark of the Canadian Pulp and Paper Association and help by every means possible to place Canada on the pulp and paper map.

There have been no advances in Canadian paper during the past few weeks, but the tendency is for prices to stiffen and there is no telling when an increase in quotations will occur. On the other side of

the line prices are going up all the time and Canadian representatives of American firms are constantly being advised of the jump in figures. Chip board and vat-lined board have been raised five dollars a ton by the American mills, and four ounce semi-crepe toilet paper has jumped from two-fifteen to two-forty and all other lines in proportion. Many mills have withdrawn lists on fine paper Glassine is very strong and no orders are being accepted for shipment at present quotations beyond thirty days. All jute papers, tissues and machine finish lines are on the increase. The advances on some grades have been as much as twenty per cent. Other mills have sent out advices that they can accept orders at present prices within a few days and, after that period, customers will have to pay whatever the prevailing values are.

There is a decided improvement in the demand for bleached sulphite pulp and the Canadian mills have advanced their prices from five to ten dollars at the mill, the figure now being from \$110 to \$115. Business is coming very fast and the book mills across the border report that there are many requisitions for the better grade of paper and wherever possible bleached sulphite is being used. In January last Canadian pulp sales with the mills in Uncle Sam's domain fell off sharply since many machine were closed down. There were very limited buying and the industries did not care to stock up. This state of affairs continued until the middle of April when wholesale concerns and large consumers began to enter the market owing to depleted stocks and the shattering of the conviction, hitherto prevailing, that prices on many lines of paper would come down. The predictions so freely made at the beginning of the year did not come true and pulp producers held their stock rather than accept a less figure. Now conditions are active and growing more so all the time and Canadian sulphite mills report business as brisk. One concern is turning out over a hundred tons a day at one of its plants and will still increase its production of bleached sulphite while its selling force has been strengthened in order to cover adequately the field.

Easy bleaching is still selling at eighty-five to ninety

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dollars at mill with a fair demand and groundwood is moving moderately. There is plenty of water still in the streams and until some of the grinders across the border cannot operate, there may be no change in the demand which is then expected to pick up. Sales are being made from twenty-eight to thirty dollars at mill. As soon as export is able to take care of the stocks on hand, all the Quebec plants making groundwood pulp will be running to capacity.

There is a great rush for toilet and tissue papers of all kinds and Canadian units have all the business they can attend to for weeks to come. A good deal of the product is being sent abroad. It is expected that the newsprint tribunal will give judgment in a few days on the price of newsprint. This matter has been hanging fire so long that it will be a welcome relief when final determination of the rate is fixed.

There is scarcely a week passes now but some new trade or other publication does not appear in the Dominion. During the past year fifty-five new weeklies were started, but the number of dailies is nine less than it was the year before. There are now issued in the Dominion 126 daily papers, and the total number of Canadian publications of all kinds increased from 1,490 to 1,552. A recent directory issued by a leading firm indicates great activity in the publishing field during 1918, and says that the present situation warrants optimism of the soundest nature. There is a healthy condition prevailing generally from the east to the west and, in spite of the labor disturbances and the general industrial unrest, most publications are carrying considerably more advertising matter than a year ago.

Manufacturing stationers, envelope manufacturers and makers of special lines of paper are all busy and orders keep coming in. In some instances the mills are unable to take care of the business and it looks as if some purchasers are trying to stock up before there are any advances in prices, which will surely come by the fall. Paper box plants are doing a nice trade and board mills are busy. The outlook on the whole is good and there will be no midsummer quietness. A number of paper box makers are this week attending the annual convention which is being held in Montreal and are enjoying a trip down the St. Lawrence as far as the Saguenay. It is expected that the annual meeting of the Canadian Press Association, which was postponed this month owing to the industrial unrest, will take place in Toronto probably during the progress of the Canadian National Exhibition during the last week in August or the first week in September.

NEW YORK MARKETS.

New York, June 21.—Demand for paper of virtually all kinds from various sources continues to show improvement, and the market is steadily acquiring a livelier complexion. A feature of the existing situation is that the demand is of a very healthy character. Consumers are still buying in a reserved manner, generally confining their orders to quantities for which they have direct need, and it can safely be stated without fear of contradiction that the great bulk of supply now being absorbed is going almost immediately into consumption. In view of this and the rapid improvement in all lines of trade, present indications are for a continuance of the increasing demand and a strong market. In this connection the

American Writing Paper Company, the largest producer of fine papers in the United States, says in an analysis of the paper market issued this week that "conditions in the paper industry, and particularly in the writing paper field, are more promising than they have been in many years." The statement goes on to say that the general expansion in business, the increase in advertising by big enterprises through circular letters, and the demand from foreign countries from firms that are adopting modern business methods have broadened out the market to a considerable extent. The statement also says that the company anticipates higher prices for its product and will accept orders only for immediate delivery, it being its belief that the paper business cannot help but benefit from the general expansion in other industries, and that it does not believe that the cost of making paper can be reduced. Furthermore, it states, foreign inquiries are being received which indicate interesting possibilities.

The market for newsprint is firm, and although demand from transient buyers has dropped off somewhat, mills are having little or no difficulty in finding a ready outlet for virtually all of their output, with the result that stocks are not accumulating and prices are strongly maintained. Judging from the editions being printed by the local newspapers, the consumption of newsprint has not decreased at all. The boom in advertising continues and as long as it does the probabilities are publishers will use equally as large tonnage of newsprint as they have during the past several months.

Another strong grade of paper is book. Magazines and other periodicals are repeatedly finding it necessary to increase their number of pages, while editions are running larger than ever before. Manufacturers of book papers consequently are being pushed to satisfy the wants of their customers, and most mills are shipping out the bulk of their product almost as soon as it becomes available. Prices on book papers, as would be expected under prevailing circumstances, are firm, and the tendency is strongly upward. Super-calendered book is quoted at from 8 cents a pound upward, while machine finished book is priced at 7.50 to 8 cents and coated and enamelled at 9.50 to 10 cents.

Fine papers are in good demand and prices are hardening. Manufacturers who have recently been producing a low grade bond to sell at around 9 cents per pound have withdrawn lines at this price, and about the cheapest figures now quoted on bond paper are 10 or 11 cents. Tissues are moving in better volume and prices have been advanced a shade, No. 1 white now being quoted at around \$1, No. 2 white at 90 cents and No. 1 manila at 95 cents. Wrappings and other coarse papers are in a firmer market position and are sought in increasing quantity.

The situation in box boards continues comparatively quiet. Mills are generally in want of business and are operating only on part time, yet prices are maintained and indications point to an expansion of demand in the near future when box makers commence to cover their fall requirements.

Groundwood.—Mechanical pulp is moving in a consistent manner on contract, but grinders report demand from transient buyers to be rather narrow. There is little or no selling pressure in evidence, however, and prices are well sustained at a basis of about \$26 per ton at the pulp mill for groundwood of prime quality.

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Expectations of most members of the trade are for a shortage of groundwood before the summer is over, and this prompts manufacturers to hold surplus stocks with much firmness.

Chemical Pulp.—With paper manufacturers experiencing a better demand for their own product, they are naturally coming into the market for larger amounts of raw material and the result is that chemical pulps of both domestic and foreign description are moving in increasing volume. Prices are firm and there is a marked tendency toward higher levels apparent in quotations. Business in foreign pulp has been of greater volume this week than for some time. Manufacturers in the Scandinavian countries have granted concessions in prices sufficiently attractive to be indicative of an increased number of orders from American consumers, and quite a lot of sales have been effected in unbleached sulphite for shipment at 4.50

to 4.75 cents a pound, of bleached sulphite at around 7.50 cents, of easy bleaching at 5.00 to 5.25 cents and of kraft at 4.00 to 4.25 cents. Domestic grades are notably steady at ranges of 5.25 to 6.00 cents for bleached sulphite, 3.25 to 3.50 cents for newsprint sulphite, 4.25 to 4.50 cents for easy bleaching and 3.50 to 3.75 cents for kraft.

Rags.—Increasing activity and further advancement in prices have been the outstanding characteristics of the rag market this week. Mills have been freely seeking fresh supplies, and dealers, claiming that they are unable to replace the stock disposed of at the same prices, are demanding higher figures in almost every selling transaction. Roofing rags in particular are strongly quoted. New York dealers are holding No. 1 roofing stock at between \$44 and \$45 per ton f.o.b. this city, while reports from the Middle West tell of pack-

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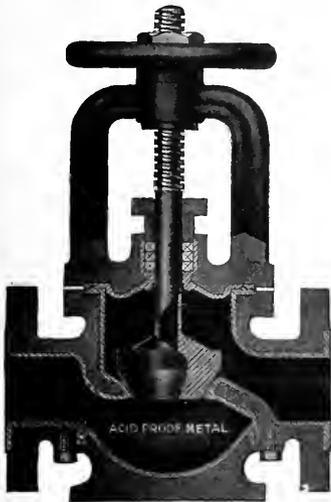
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ers there insisting on a minimum price of \$50 for roofing rags. Repacked thirds and blues of best quality are easily fetching 4.50 cents per pound f.o.b. New York in sales to mills, while in some cases, sales have been effected at higher levels. White rags of all grades are sought by consumers and are firmly held by packers, who quote between 7.00 and 7.50 cents New York on No. 1 repacked whites, around 5.25 cents for No. 2 repacked, and from 6.00 to 6.50 cents for No. 1 miscellaneous packing. Net cuttings of all kinds are moving at attractive prices. A strike among the sorters of new rags restricts the present production and enhances the value of such supplies as dealers have to offer.

Paper Stock.—A good demand exists for several descriptions of old paper, such as soft white shavings and book stock, but the aggregate movement of supplies into consuming channels continues to be dissatisfying to dealers while prices on most grades prevail on rather low levels. No. 1 soft white shavings have sold quite freely during the current weeks at around 3.25 cents a pound f.o.b. New York, and choice packing has commanded better prices. Heavy flat stock is moving in consistent volume toward book paper mills at an average figure of 1.75 cents New York, and although several of the large consumers in the West who have been recently buying in the Eastern market have retired, dealers say they are finding a ready outlet for all the books and magazines they can scrape together. Kraft paper is quotably firm and in fair demand, while occasional sales involving sizable tonnages of manilas are reported. Folded newspapers are selling at about 55¢ per hundred pounds f.o.b. New York and No. 1 mixed paper at 40 cents.

Bagging and Rope.—Scrap bagging is priced at rela-

tively lower levels than possibly any other description of paper making material at present, due, as would be expected, to the restricted demand from consuming sources. No. 1 scrap is selling at 2.25 cents a pound New York, and sales are reported in some cases at a dollar or two per ton below this figure. The market for old rope is firm, with current quotations on No. 1 Manila rope ranging from 4.50 to 4.75 cents a pound New York, and on strings at 1.90 to 2.00 cents.

UNITED WIRE WORKS, LTD., RESUMING CANADIAN CONNECTIONS.

Among the many business relations between Canadian paper makers and equipment houses in the Old Country to suffer on account of the war was the United Wire Works, Ltd., of Edinburgh, Glasgow, Newcastle-on-Tyne, and Birmingham. This concern is now resuming shipments actively. They have recently made considerable additions to their buildings and equipment.

In one department a large finishing machine has been erected, which is capable of treating in the latest and most approved method, paper machine wires up to 240 inches in width and 98 feet in length. This capacity seems to be looking a good way into the future, but it is interesting to note that a large number of orders have already been executed for wires ranging from 156 to 201 inches in width. While there is still considerable margin to work upon before the maximum capacity is reached, yet it is significant of the tendency of the times that paper machine wires more than 205" in width have already been supplied.

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WOOD PULP
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Incorporated

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Established 1886

... department of the United Wire Works
 ... alterations have been made which have
 ... possible great improvements in the surface
 ... finishing of the wires. This is a very important
 ... and one which will obviate the trouble so
 ... experienced in paper mills of what is commonly
 ... known as "filling up." The well known firm of A.
 P. Tippet & Co., 8 Place Royale, Montreal, are the
 sole agents in Canada and Newfoundland for the
 United Wire Works, Ltd.

INTRODUCING MR. MINCH.

An increasing number of British paper dealers are looking to Canada for supplies of material, and the accompanying picture shows Mr. H. Minch, who is now on his way to Canada. It is his desire to get in touch with manufacturers who will be able to turn a part of their product to the British market. In his letter to the Pulp & Paper Magazine, Mr. Minch

MEET MR. LAING, OF JONES & GLASSCO.

Jones & Glasco, Reg'd., announce the appointment, as their Toronto Representative of Mr. P. M. Laing, recently Toronto branch manager of Herbert Morris Crane and Hoist Co. Mr. Laing has had broad experience in the engineering field, particularly as applied to transmission appliances and equipment, having been for a number of years connected with the Positive Clutch and Pulley Works, and also the Elmira Machinery and Transmission Co. This experience, combined with several years' architectural, engineering and industrial study of applications serving a wide clientele, has earned for him a highly respected connection both in Toronto and throughout Ontario. A call at the Toronto Office, located at 1203 Bank of Hamilton Building, will find Mr. Laing ready to respond to all enquiries of the well-known firm of Jones & Glasco, Reg'd., in the power transmission field.



states that on account of the recent regulations of the Board of Trade with regard to paper imports it will be particularly necessary for consumers in the United Kingdom of news, packing and wrapping papers to buy about 4-5ths of their requirements within the British Empire. This, of course, will give Canadian mills considerable preference, and result in increased demands for their products. Some English concerns which have previously represented Scandinavian mills will now be prepared to act for Canadian producers.

Mr. Minch is particularly interested in container board, and container manufacturing, while he will be glad to give any information that he may have in regard to the development of the British market for other materials such as wrappings.

Communications for Mr. Minch may be addressed, Care Pulp & Paper Magazine, Garden City Press, Ste. Anne de Bellevue, Que.



Recently Toronto Branch Manager of Herbert Morris Crane and Hoist Co., now appointed Toronto Representative of Jones & Glasco (Reg'd.), Power Transmission Specialists.

KENOGAMI MILL NOTES.

The production of the four paper machines for the month of May was as follows:—

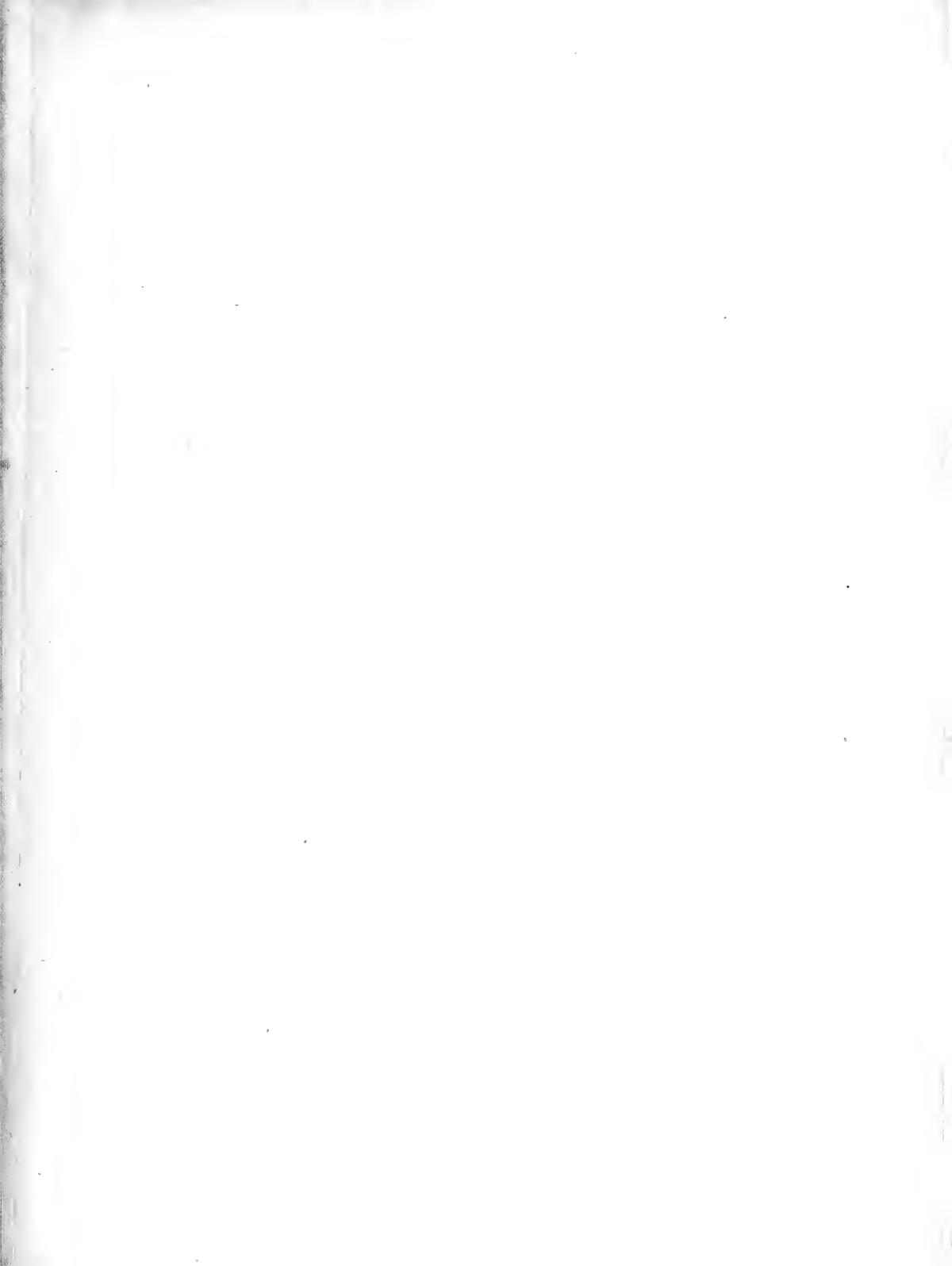
No. 1	2,776,850 Lbs.
" 2	2,890,550 "
" 3	2,910,060 "
" 4	2,744,140 "

Total 11,321,600 "

The new Sulphite Digester is practically completed, and in a very few days will be in readiness for the ministrations of the Boiler Inspector.

Rapid progress is being in the preparations for housing the new Paper Machine. If shipments from England are made as expected, it will not be a surprise if the date of operation is earlier than anticipated.





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